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DIRECT TESTIMONY AND EXHIBITS OF

DAVID C. PARCELL

ON BEHALF OF

THE SOUTH CAROLINA OFFICE OF REGULATORY STAFF

DOCKET NO. 2018-319-E

IN RE: APPLICATION OF DUKE ENERGY CAROLINAS, LLC

FOR ADJUSTMENTS IN ELECTRIC RATE SCHEDULES AND TARIFFS AND

REQUEST FOR AN ACCOUNTING ORDER

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is David C. Parcell. I am a Principal and Senior Economist of Technical Associates, Inc. My business address is Suite 130, 1503 Santa Rosa Rd., Richmond, Virginia 23229.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I hold B.A. (1969) and M.A. (1970) degrees in economics from Virginia Polytechnic Institute and State University (Virginia Tech) and a M.B.A. (1985) from Virginia Commonwealth University. I have been a consulting economist with Technical Associates since 1970. I have provided cost of capital testimony in public utility ratemaking proceedings dating back to 1972. In this regard, I have previously filed testimony and/or testified in over 570 utility proceedings before about 50 regulatory

agencies in the United States and Canada. Exhibit DCP-1 provides a more complete description of my education and relevant work experience.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes. I have testified before this Commission a number of times, going back to 1980. These cases involved rate filings of Duke Power Co. and Carolina Power & Light Co., the predecessor companies of Duke Energy Carolinas and Duke Energy Progress.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The South Carolina Office of Regulatory Staff ("ORS") retained me to evaluate the cost of capital aspects of Duke Energy Carolinas, LLC ("DEC" or "Company"), relative to the current filing. I have performed independent studies and am making recommendations of the current cost of equity capital for DEC. In addition, since DEC is a subsidiary of Duke Energy Corporation ("DE" or "Parent"), I have also evaluated this entity in my analyses.

Q. HAVE YOU PREPARED AN EXHIBIT IN SUPPORT OF YOUR TESTIMONY?

A. Yes, I have prepared one exhibit, labeled Exhibit DCP-2, identified as Schedule 1 through Schedule 14. This exhibit was prepared either by me or under my direction. The information contained in this exhibit is correct to the best of my knowledge and belief.

II. RECOMMENDATIONS AND SUMMARY

Q. WHAT ARE YOUR RECOMMENDATIONS IN THIS PROCEEDING?

A. My overall cost of capital recommendations for DEC are shown on Schedule 1 and are summarized as follows:

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Item	Percent	Cost	Weighted Cost
Long-Term Debt	47.00%	4.44%	2.09%
Common Equity	53.00%	9.10%-9.50%	4.82-5.04%
Total	**100.0%**		**6.91-7.12%**

Recommended cost of capital: 7.02% with 9.3% ROE

DEC's application requests a cost of capital of 7.74 percent and a cost of equity of 10.50 percent.

Q. PLEASE SUMMARIZE YOUR ANALYSES AND CONCLUSIONS.

A. This proceeding is concerned with DEC's regulated electric utility operations in South Carolina. My analyses concern the Company's cost of capital. The first step in performing these analyses is to develop the appropriate capital structure. DEC proposes use of a hypothetical capital structure with 47 percent long-term debt and 53 percent common equity, which DEC witness Sullivan describes as the "optimal" capital structure for the Company.[1] I also use this capital structure.

The second step in a cost of capital calculation is to determine the embedded cost rate of debt. DEC proposes to use a cost rate of 4.63 percent for long-term debt, the rate as of December 31, 2017.[2] I do not use this cost rate but instead use the most current cost of long-term debt *(i.e.,* 4.44 percent) that includes several long-term debt issuances in 2018 to replace three long-term debt issues that matured in 2018.

The third step in the cost of capital calculation is to estimate the cost of equity. I employ three recognized methodologies to estimate DEC's cost of equity, each of which I

[1] Direct Testimony of John L. Sullivan, page 15, lines 13-16.
[2] Direct Testimony of John L. Sullivan, page 18, lines 18-19.

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apply to two proxy groups of electric utilities. These three methodologies and my findings are:

Methodology	Conclusions Mid-Point	Conclusions Range
Discounted Cash Flow ("DCF")	9.10%	9.0-9.2%
Capital Asset Pricing Model ("CAPM")	6.45%	6.3-6.6%
Comparable Earnings ("CE")	9.50%	9.0-10.0%

Based upon these findings, I conclude that DEC's cost of equity is within a range of 9.10 percent to 9.50 percent (9.30 percent mid-point), which is based upon the mid-point of my DCF results and mid-point of my CE results models.[3]

Combining these three steps into the weighted cost of capital results in an overall cost of capital of 6.91 percent to 7.12 percent (which incorporates an 9.10 percent to 9.50 percent cost of equity). My specific cost of capital recommendation is the mid-point of this range, or 7.02 percent (9.30 percent cost of equity).

III. ECONOMIC/LEGAL PRINCIPLES AND METHODOLOGIES

Q. WHAT ARE THE PRIMARY ECONOMIC AND REGULATORY PRINCIPLES THAT ESTABLISH THE STANDARDS FOR DETERMINING A FAIR RATE OF RETURN FOR A REGULATED UTILITY?

A. Public utility rates are normally established in a manner designed to allow the recovery of their costs, including capital costs. This is frequently referred to as "cost of service" ratemaking. Rates for regulated public utilities traditionally have been primarily established using the "rate base – rate of return" concept. Under this method, utilities are allowed to recover a level of operating expenses, taxes, and depreciation deemed

[3]As I indicate in a later section, my cost of equity recommendation does not directly incorporate the CAPM results, which I believe to be somewhat low at this time, relative to the DCF and CE results.

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reasonable for rate-setting purposes, and are granted an opportunity to earn a fair rate of return on the assets utilized (*i.e.*, rate base) in providing service to their customers.

The rate base is derived from the asset side of the utility's balance sheet as a dollar amount and the rate of return is developed from the liabilities/owners' equity side of the balance sheet as a percentage. Thus, the revenue impact of the cost of capital is derived by multiplying the rate base by the rate of return, including income and other taxes.

The rate of return is developed from the cost of capital which is estimated by weighting the capital structure components (*i.e.*, debt, and common equity) by their percentages in the capital structure and multiplying these values by their cost rates. This is also known as the weighted cost of capital.

Technically, "fair rate of return" is a regulatory and accounting concept that refers to an *ex post facto* (after the fact) earned return on an asset base while the cost of capital is an economic and financial concept which refers to *ex ante facto* (before the fact) expected, or required, return on a capital base. In regulatory proceedings, however, the two terms are often used interchangeably, and I have equated the two concepts in my testimony.

From an economic standpoint, a fair rate of return is normally interpreted to mean that an efficient and economically-managed utility will be able to maintain its financial integrity, attract capital, and establish comparable returns for similar risk investments. These concepts are derived from economic and financial theory and are generally implemented using financial models and economic concepts.

With regard to the regulatory standards, my testimony is based on my understanding that two United States Supreme Court decisions provide the controlling standards for a fair rate of return. The first decision is *Bluefield Water Works and*

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Improvement Co. v. Public Serv. Comm'n of West Virginia, 262 U.S. 679 (1923). In this decision, the Court stated:

> The annual rate that will constitute just compensation depends upon many circumstances and must be determined by the exercise of fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time, and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally.

It is generally understood that the *Bluefield* decision established the following standards for a fair rate of return: comparable earnings, financial integrity, and capital attraction. It also noted that required returns change over time, and there is an underlying assumption that the utility be operated efficiently.

The second decision is *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1942). In that decision, the Court stated:

> The rate-making process under the [Natural Gas] Act, *i.e.*, the fixing of 'just and reasonable' rates, involves a balancing of the investor and consumer interests. . . . From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By this standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.

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The Commission has looked to the *Hope* and *Bluefield* standards as guidance for setting rates. For example, in both Docket No. 2013-59-E, a Duke Energy Carolinas rate case from 2013, and in Docket No. 2016-227-E, a Duke Energy Progress, LLC rate case from 2016, the Commission stated:

> In setting rates, the Commission must determine a fair rate of return that the utility should be allowed the opportunity to earn after recovery of the expenses of utility operations. The legal standards applicable to this determination are set forth in Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 602-603 (1944) and Bluefield Water Works and Improvement Co. v. Pub. Serv. Comm'n of W. VA., 262 U.S. 679, 692-93 (1923). These standards were adopted by the South Carolina Supreme Court in Southern Bell Tel. & Tel. Co. v. S.C. Pub. Serv. Comm'n, 270 S.C. 590, 595-96, 244 S.E.2d 278, 281 (1978). The Court stated:
>
> What annual rate will constitute just compensation depends upon many circumstances, and must be determined by the exercise of a fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties…
>
> Southern Bell Tel., 270 S.C. at 595-96, 244 S.E.2d at 281 (quoting Bluefield, 262 U.S. at 692-93). These cases also establish that the process of determining rates of return requires the exercise of informed judgment by the Commission. The South Carolina Supreme Court has held that:
>
> [T]he Commission was not bound to the use of any single formula or combination of formulae in determining rates. Its ratemaking function, moreover, involves the making of 'pragmatic adjustments' . . .. Under the statutory standard of 'just and reasonable' it is the result reached not the method employed which is controlling. . .. The ratemaking process under

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> the Act, *i.e.*, the fixing of 'just and reasonable' rates, involves the balancing of the investor and the consumer interests. Thus we stated in the Natural Gas Pipeline Co. case that 'regulation does not insure that the business shall produce net revenues.' . . . [B]ut such considerations aside, the investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on debt and dividends on the stock. . . . By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.
>
> Southern Bell Tel., 270 S.C. at 596-97, 244 S.E. 2d at 281 (quoting Hope Natural Gas Co., 320 U.S. at 602-03). These principles have been employed by the Commission and the South Carolina Courts consistently.

The three economic and financial parameters in the *Bluefield* and *Hope* decisions – comparable earnings, financial integrity, and capital attraction – reflect the economic criteria encompassed in the "opportunity cost" principle of economics. The opportunity-cost principle provides that a utility and its investors should be afforded an opportunity (not a guarantee) to earn a return commensurate with returns they could expect to achieve on investments of similar risk. The opportunity-cost principle is consistent with the fundamental premise on which regulation rests, namely, that it is intended to act as a surrogate for competition.

Q. HOW CAN THE *BLUEFIELD* AND *HOPE* PARAMETERS BE EMPLOYED TO ESTIMATE THE COST OF CAPITAL FOR A UTILITY?

A. Neither the courts nor economic/financial theory has developed exact and mechanical procedures for precisely determining the cost of capital. This is the case because the cost of capital is an opportunity cost and is prospective-looking, which dictates that it must be estimated. However, there are several useful models that can be employed

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to assist in estimating the cost of common equity ("return on equity" or "ROE"), which is the capital cost component that is the most difficult to estimate. These include the DCF, CAPM, CE, and risk premium ("RP") methods. I have not directly employed a RP model in my analyses although, as discussed later, my CAPM analysis is a form of the RP methodology. I describe each of these methodologies in more detail later in my testimony.

IV. GENERAL ECONOMIC CONDITIONS

Q. ARE ECONOMIC AND FINANCIAL CONDITIONS IMPORTANT IN DETERMINING THE COSTS OF CAPITAL FOR A PUBLIC UTILITY?

A. Yes. The costs of capital for both fixed-cost (debt and preferred stock) components and common equity are determined in part by current and prospective economic and financial conditions. At any given time, each of the following factors has an influence on the costs of capital:

- The level of economic activity (*i.e.*, growth rate of the economy);
- The stage of the business cycle (*i.e.*, recession, expansion, or transition);
- The level of inflation;
- The level and trend of interest rates; and,
- Current and expected economic conditions.

My understanding is that this position is consistent with the *Bluefield* decision, which noted "[a] rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally."[4]

[4] *Bluefield*, 262 U.S. at 693.

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Q. WHAT INDICATORS OF ECONOMIC AND FINANCIAL ACTIVITY DID YOU EVALUATE IN YOUR ANALYSES?

A. I examined several sets of economic statistics from 1975 to the present. I chose this time period because it permits the evaluation of economic conditions over four full business cycles, plus the current cycle, allowing for an assessment of changes in long-term trends. Consideration of economic/financial conditions over a relatively long period of time allows me to assess how such conditions have impacted the level and trends of the costs of capital. This period also approximates the beginning and continuation of active rate case activities by public utilities that generally began in the mid-1970s.

A business cycle is commonly defined as a complete period of expansion (recovery and growth) and contraction (recession). A full business cycle is a useful and convenient period over which to measure levels and trends in long-term capital costs because it incorporates the cyclical (*i.e.*, stage of business cycle) influences and, thus, permits a comparison of structural (or long-term) trends.

Q. PLEASE DESCRIBE THE TIMEFRAMES OF THE FOUR PRIOR BUSINESS CYCLES AND THE CURRENT CYCLE.

A. The four prior complete cycles and current cycle cover the following periods:

Business Cycle	Expansion Cycle	Contraction Period
1975-1982	Mar. 1975-July 1981	Aug. 1981-Oct. 1982
1982-1991	Nov. 1982-July 1990	Aug. 1990-Mar. 1991
1991-2001	Mar. 1991-Mar. 2001	Apr. 2001-Nov. 2001
2001-2009	Nov. 2001-Nov. 2007	Dec. 2007-June 2009
Current	July 2009 -	

Source: The National Bureau of Economic Research, "U.S. Business Cycle Expansions and Contractions."[5]

[5] http://www.nber.org/cycles/cyclesmain.html.

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Q. DO YOU HAVE ANY GENERAL OBSERVATIONS CONCERNING THE RECENT TRENDS IN ECONOMIC CONDITIONS AND THEIR IMPACT ON CAPITAL COSTS OVER THIS BROAD PERIOD?

A. Yes, I do. From the early 1980s until the end of 2007, the United States economy enjoyed general prosperity and stability. This period was characterized by longer economic expansions, relatively tame contractions, low and declining inflation, and declining interest rates and other capital costs.

However, in 2008 and 2009 the economy declined significantly, initially as a result of the 2007 collapse of the "sub-prime" mortgage market and the related liquidity crisis in the financial sector of the economy. Subsequently, this financial crisis intensified with a more broad-based decline initially based on a substantial increase in petroleum prices and a dramatic decline in the U.S. financial sector of the economy.

This decline has been described as the worst financial crisis since the Great Depression of the 1930s and has been referred to as the "Great Recession." Beginning in 2008, the U.S. and other governments implemented unprecedented policies to attempt to correct or minimize the scope and effects of this recession. Some of these policies are still in effect.

Q. PLEASE DESCRIBE RECENT AND CURRENT ECONOMIC AND FINANCIAL CONDITIONS AND THEIR IMPACT ON THE COSTS OF CAPITAL.

A. One impact of the Great Recession has been a reduction in actual and expected investment returns and a corresponding reduction in capital costs. This decline is evidenced by a decline in both short-term and long-term interest rates and the expectations of investors and is reflected in cost of capital model results (such as DCF, CAPM, and CE).

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Regulatory agencies throughout the U.S. have recognized the decline in capital costs by authorizing lower ROEs for regulated utilities in each of the last several years.[6]

Schedule 2 shows several sets of relevant economic and financial statistics for the cited time periods. Page 1 contains general macroeconomic statistics, page 2 shows interest rates, and page 3 contains equity market statistics.

Page 1 shows that in 2007 the economy stalled and subsequently entered a significant decline, as indicated by the lower growth rate in real (*i.e.*, adjusted for inflation) Gross Domestic Product ("GDP"), lower levels of industrial production, and an increase in the unemployment rate. This recession lasted until mid-2009, making it a longer-than-normal, as well as a much deeper, recession. Since then, economic growth has been somewhat erratic, and the economy has grown more slowly than in prior expansions.

Page 1 also shows the rate of inflation. As reflected in the Consumer Price Index ("CPI"), inflation rose significantly during the 1975-1982 business cycle and reached double-digit levels in 1979-1980. The rate of inflation has declined substantially since 1981. Since 2008, the CPI has been 3 percent or lower on an annual basis, with 2014 and 2015 growth below 1 percent, 2016 and 2017 growth at 2.1 percent, and 2018 growth at 1.9 percent. It is thus apparent that the rate of inflation has generally been declining over the past several business cycles. Recent and current levels of inflation are at the lowest levels of the past 35 years, which is reflective of lower capital costs.[7]

Q. WHAT HAVE BEEN THE TRENDS IN INTEREST RATES OVER THE FOUR PRIOR BUSINESS CYCLES AND AT THE CURRENT TIME?

[6] Regulatory Research Associates, "Regulatory Focus." January 31, 2019.
[7] The rate of inflation is one component of interest rate expectations of investors, who generally expect to receive a return in excess of the rate of inflation. Thus, a lower rate of inflation has a downward impact on interest rates and other capital costs.

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A. Page 2 shows several series of interest rates. Both short-term and long-term rates rose sharply to record levels in 1975-1982 when the inflation rate was high. Interest rates have declined substantially in conjunction with the corresponding declines in inflation since the early 1980s.

From 2008 to late 2015, the Federal Reserve System ("Federal Reserve") maintained the Federal Funds rate (*i.e.*, short-term interest rate) at 0.25 percent, an all-time low. Following much anticipation, the Federal Reserve has subsequently raised the Federal Funds rate on nine occasions between December of 2015 and December of 2018.[8] The Federal Reserve also purchased U.S. Treasury securities to stimulate the economy.[9]

As seen on page 2, since 2011 both U.S. and public utility bond yields have declined to their lowest levels in the past four business cycles and in more than 35 years. Even with the "tapering" and eventual ending of the Federal Reserve's Quantitative Easing program, as well as the Federal Reserve's raising of the Federal Funds rate, interest rates have remained relatively low. The rates on U.S. Treasury and public utility securities increased somewhat in the first several months of 2018, before falling over the past few months. Despite this, both government and utility long-term lending rates remain near historically low levels, again reflective of lower capital costs.

Q. WHAT DOES SCHEDULE 2 SHOWS FOR TRENDS OF COMMON SHARE PRICES?

[8] The Fed Funds increases took place in December 2015, December 2016, March 2017, June 2017, December 2017, March 2018, June 2018, September 2018, and December 2018.

[9] This is referred to as Quantitative Easing which was comprised of three "rounds". In "round" 3, known as QE3, the Federal Reserve initially purchased some $85 billion of U.S. Treasury Securities per month in order to stimulate the economy. The Federal Reserve eventually "tapered" its purchase of U.S. Treasury securities through October 2014, at which time Quantitative Easing ended.

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A. Page 3 shows several series of common stock prices and ratios. These indicate that stock prices were essentially stagnant during the high inflation/high interest rate environment of the late 1970s and early 1980s. The 1983-1991 business cycle and the more recent cycles witnessed a significant upward trend in stock prices. The beginning of the recent financial crisis saw stock prices decline precipitously as stock prices in 2008 and early 2009 were down significantly from peak 2007 levels, reflecting the financial/economic crisis. Beginning in the second quarter of 2009, prices recovered substantially and ultimately reached and exceeded the levels achieved prior to the "crash." On the other hand, recent equity markets have been somewhat volatile, including much of 2018. As an example of this, the end of 2018 witnessed significant declines in stock prices, with many indexes declining more than 20 percent (*i.e.*, a "bear" market).

Q. WHAT CONCLUSIONS DO YOU DRAW FROM YOUR DISCUSSION OF ECONOMIC AND FINANCIAL CONDITIONS?

A. Recent economic and financial circumstances have differed from any that have prevailed since at least the 1930s. Concurrent with the Great Recession, there was a decline in capital costs and returns which significantly reduced the value of most retirement accounts, investment portfolios, and other assets. One significant aspect of this has been a decline in investor expectations of returns[10] even with the return of stock prices to levels achieved prior to the "crash."[11] This is evidenced by: (1) lower interest rates on bank deposits; (2) lower interest rates on U.S. Treasury and utility bonds; and (3) lower authorized returns on equity by regulatory commissions. Finally, as noted above, utility

[10] *See, e.g.*, Kiplinger's Personal Finance, "Investors Brace for Smaller Gains, Focus on Long-Term," August 30, 2015.
[11] *See e.g.*, Vanguard News & Perspectives. "Stabilization, Not Stagnation: Expect Modest Returns," March 30, 2017, www.personal.vanguard.com/us/insights/artical/infographic-stabilization-032017.

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bond interest rates are currently at levels well below those prevailing prior to the financial crisis of late 2008 to early 2009 and, despite recent increases, remain near the lowest levels in the past 35 years and are also generally lower than the embedded cost rates for most utilities.

Q. HOW DO THESE ECONOMIC/FINANCIAL CONDITIONS IMPACT THE DETERMINATION OF A RETURN ON EQUITY FOR REGULATED UTILITIES?

A. The costs of capital for regulated utilities have declined in recent years. In addition, the results of the traditional ROE models (*i.e.*, DCF, CAPM, and CE) are lower than was the case prior to the Great Recession. In light of this, it is not surprising that the average ROEs authorized by state regulatory agencies have declined and continued to remain relatively low through at least June of 2018, as follows:[12]

	Electric		Natural Gas	
	Average	Median	Average	Median
2007	10.32%	10.23%	10.22%	10.20%
2008	10.37%	10.30%	10.39%	10.45%
2009	10.52%	10.50%	10.22%	10.26%
2010	10.29%	10.26%	10.15%	10.10%
2011	10.19%	10.14%	9.91%	10.05%
2012	10.02%	10.00%	9.93%	10.00%
2013	9.82%	9.82%	9.68%	9.72%
2014	9.76%	9.75%	9.78%	9.78%
2015	9.60%	9.53%	9.60%	9.68%
2016	9.60%	9.60%	9.53%	9.50%
2017	9.68%	9.60%	9.73%	9.60%
2018	9.56%	9.57%	9.60%	9.60%

[12] Regulatory Research Associates, "Regulatory Focus", January 31, 2019, General Rate Cases.

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Q. THE TABLE ABOVE APPEARS TO INDICATE THAT THE DECLINE IN THE AVERAGE AND MEDIAN AUTHORIZED RETURNS ON EQUITY FOR ELECTRIC UTILITIES IN RECENT YEARS MAY HAVE MODERATED. IS THIS A PROPER ASSESSMENT OF THE TREND IN ROES?

A. No, this does not tell the whole story of the trend in authorized ROEs. Another relevant consideration is how the recently-authorized ROEs compare to the previously-authorized ROEs for the various utilities that have had rate decisions in recent years. I have shown this comparison on Schedule 3, which reflects the electric utility proceedings in 2017 and 2018, where an authorized ROE was identified. This schedule also identifies the previously-authorized ROE if it was determined in 2012 or after. As this schedule indicates, there were 64 proceedings that meet these criteria. Of these 64, only nine reflected an increased ROE in 2017 or 2018, 14 reflected no change in ROE, and 41 reflected a decrease in the ROE. Clearly, the vast majority of authorized ROEs represented a decline from the previously authorized ROE over this period. Furthermore, the average commission-authorized ROE declined by 0.22 percentage points and the median ROE declined by 0.20 percentage points. This demonstrates that regulatory commissions, in general, have appropriately recognized the continuing declining trend in the costs of capital for public utilities.

V. DUKE ENERGY CAROLINAS, LLC'S OPERATIONS AND BUSINESS RISKS

Q. PLEASE DESCRIBE DEC AND ITS OPERATIONS.

A. DEC is an electric utility that is engaged in the generation, transmission, distribution, and sale of electricity to approximately 2.5 million customers in an area covering some 24,000 square miles in North Carolina and South Carolina. About 500,000

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of these customers are in South Carolina. DEC was previously named Duke Power Company, which merged with PanEnergy (a natural gas company) in 1997 to form DE.

Q. PLEASE DESCRIBE DEC'S CURRENT OWNERSHIP STRUCTURE.

A. Following the merger cited above, DEC is a subsidiary of DE. DE is a holding company that also owns Duke Energy Progress ("DEP"), Duke Energy Indiana ("DEI"), Duke Energy Kentucky ("DEK"), Duke Energy Ohio ("DEO"), and Piedmont Natural Gas (which was acquired in 2016).

Q. WHAT ARE THE CURRENT SECURITY RATINGS OF DEC?

A. The current ratings of DEC are as follows:

Rating Agency	Senior Secured	Senior Unsecured
Moody's	Aa2	A1
S&P	A	A-

Source: Response to DEC ORS 2-10, as updated in response to DEC ORS 22-2.

Q. WHAT HAVE BEEN THE RECENT TRENDS IN DEC'S DEBT RATINGS?

A. This is shown on Schedule 4. DEC's senior secured debt has been rated in the Aa category by Moody's since 2014. Its ratings by S&P have been A over this period. DEC's ratings have been higher than those of DE throughout this period.

Q. HOW DO DEC'S RATINGS COMPARE TO THOSE OF DE AND ITS OTHER UTILITY SUBSIDIARIES?

A. The current senior secured debt of DEC and other DE utility subsidiaries are as follows:

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Company	Moody's	S&P
DEC	Aa2	A
DEP	Aa3	A
DEF	A1	A
DEO	A2	A
DEI	Aa3	A
DEK	Baa1	A-

Source: Response to ORS DR-10, as updated in response to ORS-22-2.

DE's senior unsecured ratings are Baa1 by Moody's and BBB+ by S&P. As this indicates, DEC has the highest ratings among the DE utility subsidiaries.

Q. HOW DO THE RATINGS OF DEC COMPARE TO OTHER ELECTRIC UTILITIES?

A. DEC's ratings are generally higher than most electric utilities in the U.S. This is evidenced by the relative Moody's and Standard & Poor's debt ratings, as shown on my Schedule 7 and which indicates that DEC's ratings are generally higher than those of the two groups of proxy electric utilities used to develop the cost of equity recommendations in my testimony. The higher ratings of DEC are indicative of relatively lower risk.

Q. DOES DEC HAVE ACCESS TO ANY REGULATORY MECHANISMS THAT HAVE THE EFFECT OF ENHANCING THE RECOVERY OF ITS INVESTMENTS?

A. Yes, it does. DEC has several regulatory "cost recovery" mechanisms that are beneficial to the Company's recovery of investments and expenses.

First, DEC has a Fuel and Fuel-Related Charge Adjustment, including the recovery of the incremental or avoided costs incurred to implement the Distributed Energy Resource Program. This adjustment clause is allowed pursuant to S.C. Code Ann. §§58-27-865 and

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58-39-140. With this mechanism, DEC makes annual adjustments to customer rates to recover its fuel costs.[13]

Second, DEC has a Demand Side Management and Energy Efficiency Cost Recovery ("DSM/EE") Rider. This rider is permitted pursuant to S.C. Code Ann. §58-37-20 and 10 S.C. Code Ann. Regs. 103-819 and 103-823, which allow DEC to recover all reasonable and prudent costs incurred for the adoption and implementation of qualified demand-side management and energy efficiency programs. The Commission is also authorized to award incentives to electric utilities for adopting and implementing qualified DSM/EE programs. This mechanism also permits DEC to change rates on an annual basis to recover these costs.[14]

Q. DOES DEC EMPLOY ANY ADDITIONAL TYPES OF REGULATORY MECHANISMS?

A. Yes, it does. DEC has been able to defer and later recover certain types of costs. For example, in Docket No. 2013-59-E, (*i.e.*, Order dated September 18, 2013 in DEC's prior General Rate Case), DEC was permitted recovery on the following sets of costs:

- Catawba Purchase and Allen Scrubber,
- Cliffside Unit 5,
- Buck Combined Cycle ("CC") and Bridgewater,
- Cliffside Unit 6,
- Dan River CC,
- McGuire Nuclear Station Uprate Project,

[13] Most recently approved in Docket No. 2018-3-E.
[14] Most recently approved in Docket No. 2018-255-E.

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- Fukushima and Cyber Security,
- Oconee High Energy Line Break ("HELB"), and
- Buck Retired Plant.

In addition to those regulatory mechanisms discussed above, the Company has previously sought Commission approval for other regulatory mechanisms, such as the following:

- Regulatory asset related to income taxes,
- Asset retirement obligation,
- Natural gas hedging,
- Pension deferred costs, and
- Storm Reserve Fund.

Q. HAS DEC REQUESTED ANY NEW FAVORABLE REGULATORY MECHANISMS IN THIS PROCEEDING?

A. Yes, it has. According to the Company's Application, DEC is requesting an accounting order to establish regulatory assets or liabilities for:

- Coal ash basin closure compliance costs,
- Advanced Metering Infrastructure ("AMI"),
- Carolinas West Primary Distribution Control Center ("CWPDCC"),
- W.S. Lee CC Unit,
- Catawba-Wateree river basin hydro stations relicensing,
- Lee Nuclear Project (Units 1 and 2) development costs,
- Deferred depreciation rates,
- Customer Connect project,

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- SC Grid Improvement Plan costs, and
- Reserve for end of life nuclear costs.

Q. DO THESE MECHANISMS REDUCE THE RISK OF DEC?

A. Yes, they do. Those mechanisms, on both an independent and collective basis, have the effect of transferring a portion of DEC's risk from its shareholders to its ratepayers. This is the case since the risk of fully recovering certain expenses is reduced or eliminated.

Q. ARE REGULATORY MECHANISMS A RELATIVELY NEW ASPECT OF PUBLIC UTILITY REGULATION?

A. No, they are not. A brief history of regulatory mechanisms was provided by Regulatory Research Associates.[15] This agency stated (note that the term "Adjustment Clauses" was used in the report, which is a type of regulatory mechanism):

> **A defining characteristic of an adjustment clause is that it effectively shifts the risk associated with the recovery of the expense in question from shareholders to customers**, because if the clause operates as designed, the company is able to change its rates to recover its costs on a current basis, without any negative effect on the bottom line and without the expense and delay that accompanies a rate case filing.
> . . .
> The electric and natural gas utilities' use of adjustment clauses to recover variations in certain costs outside of the traditional rate case process had its origins in the 1973 Arab oil embargo, when fuel prices skyrocketed leaving the utilities with no way to recover the increased costs in a timely manner.
> . . .
> The result was the creation of the fuel adjustment clause (FAC), essentially a single-issue rate making process, whereby a utility is permitted to implement periodic adjustments (*e.g.*, monthly, quarterly, semi-annually, annually) associated with changes in its cost of fuel.
> . . .

[15] Regulatory Research Associates, "Adjustment Clauses – a State-By-State Overview," September 12, 2017.

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> Over the ensuing years, the use of adjustment clauses has expanded greatly. Adjustment clauses are generally reserved for expenses that are outside the control of the utility or are required by law or rule.
> (Emphasis added)

Q. HAVE THE RATING AGENCIES COMMENTED ON THE RISK-REDUCING NATURE OF REGULATORY MECHANISMS?

A. Yes, they have. For example, a 2010 report by Moody's cited the risk-reducing nature of regulatory mechanisms.[16] In this report, Moody's noted:

> Some regulators believe that mechanisms like automatic adjustment clauses materially reduce the business and operating risk of a utility, providing justification for a relatively low allowed return on equity. We believe this is one of several reasons why both allowed and requested ROEs have trended downward over the last two decades.
>
> Moody's views automatic adjustment clauses, the most common of which is for fuel and purchased power, the largest component of utility operating expenses, as supportive of utility credit quality and important in reducing a utility's cash flow volatility, liquidity requirements, and credit risk.

Moody's, in fact, upgraded the bulk of the entire U.S. investor-owned utility industry in early 2014, largely due to regulators' increasing use of regulatory mechanisms and the resulting improvement of utilities' finances. Moody's noted:[17]

> We recently upgraded most US investor-owned utilities and many of their holding companies due to our view that the US regulatory environment has improved over the past several years. Most of the companies placed on review for upgrade in November 2013 were upgraded in late January 2014, and most by one notch.
> . . .
> US regulated utilities appear financially secure, thanks to their suite of transparent and timely cost and investment recovery mechanisms. When compared with other regulatory environments in developed countries, the overall regulatory environment for US utilities has steadily improved over

[16] Moody's Investors Service, "Cost Recovery Mechanisms Key to Investor Owned Utility Ratings and Credit Quality," June 13, 2010.

[17] Moody's Investors Service, "US Utility Sector Upgrades Driven by Stable and Transparent Regulatory Frameworks," February 3, 2014.

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> the past few years and is expected to remain supportive and constructive for at least the next 3-5 years.
>
> **Supportive regulatory frameworks**
>
> Over the past few years, the US regulatory environment has been very supportive of utilities. We think this is partly a function of regulators acknowledging that their utility infrastructure needs a material amount of ongoing investment for maintenance, refurbishment and renovation purposes.
>
> . . .
>
> **Stable and predictable financial profile**
>
> A transparent suite of timely recovery mechanisms helps utilities generate stable and predictable revenues and cash flows, which can support a material amount of leverage.

Q. HAS MOODY'S FURTHER COMMENTED ON THE IMPACT OF REGULATORY MECHANISMS AND REDUCED RISK/LOWER AUTHORIZED RETURN ON EQUITY FOR UTILITIES?

A. Yes. In 2015, Moody's stated:[18]

> The credit profiles of US regulated utilities will remain intact over the next few years despite **our expectation that regulators will continue to trim the sector's profitability by lowering its authorized returns on equity (ROE). Persistently low interest rates and a comprehensive suite of cost recovery mechanisms ensure a lower business risk profile for utilities**, prompting regulators to scrutinize their profitability, which is defined as the ratio of net income to book equity.
> (Emphasis added)

Q. HOW SHOULD THESE MECHANISMS BE TREATED FROM A RISK-REDUCING AND COST OF EQUITY PERSPECTIVE?

A. It is important to recognize these mechanisms in determining the cost of equity for a utility, such as DEC. Moody's, for example, cites this in the reports cited above.

[18] Moody's Investors Service, "Lower Authorized Equity Returns Will Not Hurt Near-Term Credit Profiles," March 10, 2015.

At the very least, the existence of DEC's various existing mechanisms should be recognized in the ROE determination. I recommend that DEC's return on equity be set at no higher than the mid-point of the cost of equity range for the proxy companies.

It should also be noted that these mechanisms help reduce regulatory lag. In addition to reducing risk, reduced regulatory lag helps ensure that utilities and their investors get their money back more quickly and thus experienced lesser time lost value of money.

VI. CAPITAL STRUCTURE AND COST OF DEBT

Q. WHAT IS THE IMPORTANCE OF DETERMINING A PROPER CAPITAL STRUCTURE IN A REGULATORY FRAMEWORK?

A. A utility's capital structure is important because the concept of rate base – rate of return regulation requires the capital structure to be utilized in estimating the total cost of capital. Within this framework, it is proper to ascertain whether the utility's capital structure is appropriate relative to its level of business risk and relative to other utilities.

As discussed in Section III of my testimony, the purpose of determining the proper capital structure for a utility is to ascertain its capital costs. The rate base – rate of return concept recognizes the assets employed in providing utility services and provides for a return on these assets by identifying the liabilities and common equity (and their cost rates) used to finance the assets. In this process, the rate base is derived from the asset side of the balance sheet and the cost of capital is derived from the liabilities/owners' equity side of the balance sheet. The inherent assumption in this procedure is that the dollar values of the capital structure and the rate base are approximately equal, and the former is utilized to finance the latter.

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The common equity ratio (*i.e.* the percentage of common equity in the capital structure) is the capital structure item which normally receives the most attention. This is the case because common equity: (1) usually commands the highest cost rate; (2) generates associated income tax liabilities; and (3) causes the most controversy since its cost cannot be precisely determined.

Q. WHAT ARE THE HISTORIC CAPITAL STRUCTURE RATIOS OF DEC AND DE?

A. I have first examined the historic (2014-2018) capital structure ratios of DEC and DE. As shown on page 1 of Schedule 5, DEC's common equity ratios have been:

	Excluding S-T Debt	Including S-T Debt
2014	58.3%	56.7%
2015	59.0%	58.0%
2016	53.0%	52.7%
2017	55.9%	52.6%
2018	51.5%	50.5%

Correspondingly, DE's common equity ratios, shown on page 2 of Schedule 5, have been:

	Excluding S-T Debt	Including S-T Debt
2014	52.4%	49.1%
2015	51.4%	47.9%
2016	47.4%	44.9%
2017	46.0%	43.4%
2018	46.2%	43.1%

This indicates that DE, on a consolidated basis, has maintained a capital structure with lower equity than those of DEC. Since 2016, DE's equity ratios have been well below those of DEC.

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Q. HOW DO THESE CAPITAL STRUCTURES COMPARE TO THOSE OF INVESTOR-OWNED ELECTRIC UTILITIES?

A. Schedule 6 shows the common equity ratios (excluding short-term debt in capitalization) for the groups of proxy electric utilities used in developing my cost of equity models and related conclusions. These are:

	Period	Average	Median
Parcell Proxy Group	2014-2018	49.4%	49.0%
	2021-2023	47.4%	48.0%
Hevert Proxy Group	2014-2018	50.0%	49.0%
	2021-2023	50.1%	51.0%

These equity ratios are less than those of DEC.

Q. WHAT HAVE BEEN THE AVERAGE COMMON EQUITY RATIOS ADOPTED BY STATE REGULATORY AGENCIES IN RECENT YEARS?

A. Over the past several years, the average common equity ratios cited in U.S. state regulatory electric rate proceedings have been:[19]

2013	49.25%
2014	50.28%
2015	49.54%
2016	48.91%
2017	48.90%
2018	48.95%

These are also lower than those of DEC's common equity ratios.

Q. WHAT CAPITAL STRUCTURE IS DEC REQUESTING IN THIS PROCEEDING?

[19] Regulatory Research Associates, "Regulatory Focus", January 31, 2019.

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A. DEC is proposing the use of a hypothetical capital structure with 47 percent debt and 53 percent common equity. This proposed capital structure is presented by DEC witness Sullivan, who describes this capitalization as "optimal" for the Company.[20]

Q. WHAT CAPITAL STRUCTURE DO YOU TO USE IN THIS PROCEEDING?

A. I also employ the hypothetical capital structure as proposed in DEC's application.

Q. WHAT IS THE COST RATE OF DEBT IN THE COMPANY'S APPLICATION?

A. DEC's filing requests a cost of long-term debt of 4.63 percent. This reflects the December 31, 2017, cost rate for DEC.[21] I do not use this cost rate in my analyses, but rather use a cost of long-term debt of 4.44 percent, which reflects DEC's actual embedded cost of debt following the issuance of new long-term debt in 2018 to replace three maturing issues.[22]

Q. CAN THE COST OF EQUITY BE DETERMINED WITH THE SAME DEGREE OF PRECISION AS THE COST OF DEBT?

A. No. The cost rates of debt are largely determined by known interest payments, issue prices, and related expenses. The return on equity, on the other hand, cannot be precisely quantified, primarily because this cost is an opportunity cost. As mentioned previously, there are several models that can be employed to estimate the return on equity. Three of the primary methods – DCF, CAPM, and CE – are developed in the following sections of my testimony.

VII. SELECTION OF PROXY GROUPS

Q. HOW HAVE YOU ESTIMATED THE COST OF EQUITY FOR DEC?

[20] Direct Testimony of John L. Sullivan, page 15, lines 13-16.
[21] Direct Testimony of John L. Sullivan, page 18, lines 18-19.
[22] As reflected in Response to ORS Request No. 25-5.

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A. DEC is a subsidiary of DE and is not publicly-traded, meaning that it is not possible to directly apply cost of equity models to this entity. DE is a publicly-traded company. Consequently, it is possible to directly apply cost of equity models to DE. However, in cost of capital analyses, it is customary to analyze a group of comparison, or "proxy," companies as a substitute for DEC to determine its cost of equity.

I have accordingly selected such a group of publicly-traded electric and combination electric/gas utilities for comparison to DEC. Schedule 7 shows certain operational risk characteristics of this group.

These criteria are as follows:

(1) Market cap of $20 billion or greater;

(2) Common equity ratio 40 percent or greater;

(3) Value Line Safety rank of 1 or 2;

(4) S&P and/or Moody's bond ratings of BBB or A;

(5) Currently pays dividends; and,

(6) Not currently involved in a major merger or acquisition.

In addition, I have conducted studies of the cost of equity for the electric group that was selected by DEC witness Hevert. I note that I have concerns with Mr. Hevert's inclusion of AVANGRID in his proxy group. This entity is majority owned (over 80 percent of outstanding shares) by a Spanish firm and only began trading (as minority stockholders) in 2015.

Q. PLEASE EXPLAIN WHY YOU ARE USING TWO PROXY GROUPS IN YOUR COST OF EQUITY ANALYSES.

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A. It has long been my practice to develop my own independently determined proxy group and to also conduct cost of equity analyses on the utility witness' proxy group. My conclusions and recommendations, in turn, are based upon my review of the results of both proxy groups.

VIII. DCF ANALYSIS

Q. WHAT IS THE THEORY AND METHODOLOGICAL BASIS OF THE DCF MODEL?

A. The DCF model is one of the oldest and most commonly-used models for estimating the ROE for public utilities. The DCF model is based on the "dividend discount model" of financial theory, which maintains that the value (price) of any security or commodity is the discounted present value of all future cash flows.

The DCF model is based upon two fundamental principles. First, DCF is based on the postulate that investors value an asset on the basis of the future cash flows (*i.e.*, dividends and ultimate sales in the case of common stocks) they expect to receive from owning the asset. The second DCF principle is that investors value a dollar received in the future less than a dollar received today (*i.e.*, the "time value of money"). Within this context, the current price of a company's stock is equal to the present value equivalent of the expected dividends and the proceeds from eventually selling the stock. The discount rate that equates the future anticipated dividends and future anticipated selling price with the current market price is the cost of common equity.

The DCF model is based upon the concept that the value of a share of stock is the discounted present worth of all the dividends to be received on that share. The DCF equation is:

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$$P = \frac{C_1}{(1+K_1)} + \frac{C_2}{(1+K_2)^2} + \cdots + \frac{C_n}{(1+K_n)^n}$$

where: P = current value or price

C_1 = cash flow in period 1, etc.

K_1 = discount rate in period 1, etc.

n = infinity

This relationship can be simplified if dividends are assumed to grow at a constant rate of g. As a result, the equation above can be reduced to:

$$P = \frac{D}{(K-g)}$$

which, when solved for K results in:

$$K = \frac{D}{P} + g$$

where: P = current price

D = current dividend rate

K = discount rate (cost of capital)

g = constant rate of expected growth

This formula essentially recognizes that the return expected or required by investors is comprised of two factors: the dividend yield (current income) and expected growth in dividends (future income).

Q. PLEASE EXPLAIN HOW YOU EMPLOY THE DCF MODEL.

A. I use the constant growth DCF model. In doing so, I combine the current dividend yield for each of the proxy utility stocks described in the previous section with several indicators of expected dividend growth.

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Q. HOW DID YOU DERIVE THE DIVIDEND YIELD COMPONENT OF THE DCF EQUATION?

A. Several methods can be used to calculate the dividend yield component. These methods generally differ in the manner in which the dividend rate is employed (*i.e.*, current versus future dividends or annual versus quarterly compounding variant). I use a version of the quarterly compounding variant, which is expressed as follows:

$$Yield = \frac{D_0(1 + 0.5g)}{P_0}$$

This dividend yield component recognizes the timing of dividend payments and dividend increases.

The P_0 in my yield calculation is the average of the high and low stock price for each proxy company for the most recent three-month period (*i.e.*, November 2018 – January 2019). The D_0 is the current annualized dividend rate for each proxy company.

Q. HOW DO YOU ESTIMATE THE DIVIDEND GROWTH COMPONENT OF THE DCF EQUATION?

A. The DCF model's dividend growth rate component is usually the most crucial and controversial element involved in using this methodology. The objective of estimating the dividend growth component is to reflect the growth expected by investors that is embodied in the price (and yield) of a company's stock. As such, it is important to recognize that individual investors have different expectations and consider alternative indicators in deriving their expectations. This is evidenced by the fact that every investment decision resulting in the purchase of a particular stock is matched by another investment decision to sell that stock.

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A wide array of indicators exists for estimating investors' growth expectations. As a result, it is evident that investors do not always use one single indicator of growth. It therefore is necessary to consider alternative dividend growth indicators in deriving the growth component of the DCF model. I have considered five indicators of growth in my DCF analyses. These are:

1. Years 2014-2018 (5-year average) earnings retention, or fundamental growth (per Value Line);
2. Five-year average of historic growth in earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS) (per Value Line);
3. Years 2019 and 2021-2023 projections of earnings retention growth (per Value Line);
4. Years 2015-2017 to 2021-2023 projections of EPS, DPS, and BVPS (per Value Line); and,
5. Five-year projections of EPS growth (per First Call).

I believe this combination of growth indicators is a representative and appropriate set with which to begin the process of estimating investor expectations of dividend growth for the groups of proxy companies. I also believe that these growth indicators reflect the types of information that investors consider in making their investment decisions. As I indicated previously, investors have an array of information available to them, all of which would be expected to have some impact on their decision-making process.

Q. PLEASE DESCRIBE YOUR DCF CALCULATIONS.

A. Schedule 8 presents my DCF analysis. Page 1 shows the calculation of the "raw" (*i.e.*, prior to adjustment for growth) dividend yield for each proxy company. Pages 2 and 3 show the growth rates for the group of proxy companies. Page 4 shows the DCF

calculations, which are presented on several bases: mean, median, low, and high values. These results can be summarized as follows:

	Mean	Median	Mean Low[23]	Mean High[24]	Median Low[25]	Median High[26]
Parcell Proxy Group	8.2%	8.3%	7.1%	9.1%	7.1%	9.1%
Hevert Proxy Group	8.2%	8.2%	7.0%	9.2%	6.9%	9.0%

I note that the individual DCF calculations shown on Schedule 8 should not be interpreted to reflect the expected cost of capital for individual companies in the proxy groups; rather, the individual values shown should be interpreted as alternative information considered by investors.

Q. WHAT DO YOU CONCLUDE FROM YOUR DCF ANALYSES?

A. The DCF rates resulting from the analysis of the proxy groups fall into a wide range between 6.9 percent and 9.2 percent. The highest DCF rates are 9.0 percent to 9.2 percent.

I believe a range of 9.0 percent to 9.2 percent represents the current DCF-derived ROE for the proxy groups. This range includes the highest DCF rates and exceeds the low and mean/median DCF rates. I recommend a DCF rate of 9.1 percent for DEC, which focuses on the average of highest DCF rates (*i.e.*, range of 9.0 percent to 9.2 percent) and exceeds the low and mean/median DCF rates.

I observe that the constant growth DCF model currently produces cost of equity results that are lower than has been the case in recent years. This is, in part, a reflection of

[23] Using the lowest mean growth rate.
[24] Using only the highest mean growth rate.
[25] Using the lowest median growth rate.
[26] Using the highest median growth rate.

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the decline in capital costs (*e.g.*, in terms of interest rates). I believe that the constant-growth DCF model remains relevant and informative. It is also my personal experience that this model is used the most by cost of capital witnesses of all the available cost of equity models. Nevertheless, in order to be conservative, I have focused only on the highest of the DCF results in making my recommendations. As such, I have not given consideration to the lower perceived DCF results.

Q. HAVE YOU ALSO PERFORMED A MULTI-STAGE DCF IN YOUR ANALYSES?

A. No, I have not. However, I do not believe that the properly-constructed results of a multi-stage DCF would materially differ from the results of my constant-growth DCF.

Most multi-stage DCF models use an estimate of Gross Domestic Product ("GDP") growth as the long-term stage. As is shown on my Schedule 8, the highest DCF growth rates I consider, and the growth rates that are embedded in my DCF recommendation, are about 5.0 percent to 5.9 percent. In addition, as I indicate in a later section of my testimony, government estimates of GDP growth are about 4.3 percent. Therefore, had I added a second stage to my DCF analyses, I would have been using a lower growth rate for the second stage, relative to the first stage. The result of this would have been lower DCF results.

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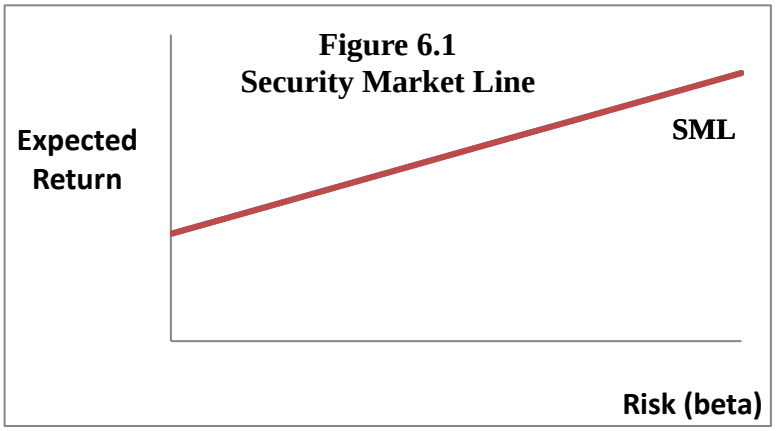
IX. CAPM ANALYSIS

Q. PLEASE DESCRIBE THE THEORY AND METHODOLOGICAL BASIS OF THE CAPM.

A. The CAPM describes the relationship between a security's investment risk and its market rate of return. This relationship identifies the rate of return which investors expect a security to earn so that its market return is comparable with the market returns earned by other securities that have similar risk.

The relationship is specified by the Security Market Line (SML). As indicated in the figure below, the SML indicates the relationship between each security's or portfolio's "beta" and its resulting expected return. The SML sets forth the "betas" and corresponding expected returns of all securities and portfolios of securities that are available in the capital market at a given moment in time.

Figure 6.1
Security Market Line



Beta is an indicator of investment risk. It is a measure of the expected amount of change in a security's price that results from a change in the overall market's security prices. As such, beta indicates the security's variability of return relative to the return variability of the overall capital market.

Variability of market returns is a measure of risk and is caused by two general factors. First, changes in economic, social, and political conditions affect the risk structure and market prices of all securities. Changes in these factors consequently cause the market return to vary. This is referred to as market risk or systematic risk. Second, each company and industry have unique business and financial attributes, which also cause returns and prices to vary. This is known as firm-specific risk or unsystematic (or non-systematic) risk.

Investors can, through diversification of their security holdings, substantially reduce or eliminate the return variation caused by the second general factor (*i.e.*, the unique business and financial attributes). However, the return variance or risk caused by the first factor (changes in economic, social, and political conditions) cannot be eliminated because changes in these factors impact all securities to some degree.

Consequently, in a diversified portfolio of securities, it is the risk associated with the first factor that commands the return premium to attract investor capital. Beta, a measure of a security's return variability relative to the return variability of the market as a whole, is an indicator of the risk associated with the first factor. The SML specifies the relationship between the non-diversifiable or systematic risk and the return premium required to be comparable with other securities of similar risk. This relationship is known as CAPM.

Q. HOW IS THE CAPM DERIVED?

A. The general form of the CAPM is:

$$K = R_f + \beta(R_m - R_f)$$

where: K = cost of equity

R_f = risk free rate

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R_m = return on market

β = beta

R_m-R_f = market risk premium

The CAPM is a variant of the risk premium ("RP") method. I believe the CAPM is generally superior to the simple RP method because the CAPM specifically recognizes the risk of a particular company or industry (*i.e.*, beta), whereas the simple RP method assumes the same cost of equity for all companies exhibiting similar bond ratings or other characteristics.

Q. WHAT INTEREST RATE DO YOU USE FOR THE RISK-FREE RATE?

A. The first input of the CAPM is the risk-free rate (R_f). The risk-free rate reflects the level of return that can be achieved without accepting any risk.

In CAPM applications, the risk-free rate is generally recognized by use of U.S. Treasury securities. Two general types of U.S. Treasury securities are often utilized as the R_f component, short-term U.S. Treasury bills and long-term U.S. Treasury bonds.

I have performed CAPM calculations using the three-month average yield (November 2018 – January 2019) for 20-year U.S. Treasury bonds. I use the yields on long-term Treasury bonds since this matches the long-term perspective of ROE analyses, as noted below. Over this three-month period, these bonds had an average yield of 3.05 percent.

Q. WHAT IS BETA AND WHAT BETAS DO YOU EMPLOY IN YOUR CAPM?

A. Beta is a measure of the relative volatility (and thus risk) of a particular stock in relation to the overall market. Betas less than 1.0 are considered less risky than the market,

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whereas betas greater than 1.0 are riskier. Utility stocks traditionally have had betas below 1.0. I utilize the most recent Value Line betas for each company in my proxy group.

Q. HOW DO YOU ESTIMATE THE MARKET RISK PREMIUM COMPONENT?

A. The market risk premium component (R_m-R_f) represents the investor-expected premium of common stocks over the risk-free rate, or long-term government bonds. For the purpose of estimating the market risk premium, I considered alternative measures of returns of the S&P 500 (a broad-based group of large U.S. companies) and 20-year U.S. Treasury bonds (*i.e.*, the same timeframe as employed in Duff & Phelps source used to develop risk premiums).

First, I compared the actual annual returns on equity of the S&P 500 with the actual annual yields of U.S. Treasury bonds. Schedule 9 shows the earned returns on equity for the S&P 500 group for the period 1978-2017 (all available years reported by S&P). This schedule also indicates the annual yields on 20-year U.S. Treasury bonds and the annual differentials (*i.e.*, risk premiums) between the S&P 500 and U.S. Treasury 20-year bonds. Based upon these returns, I conclude that the risk premium from this analysis is 7.1 percent.

I next considered the total returns (*i.e.*, dividends/interest plus capital gains/losses) for the S&P 500 group as well as for long-term government bonds, as tabulated by Duff & Phelps, using both arithmetic and geometric means. I considered the total returns for the entire 1926-2017 period, which are as follows:

	S&P 500	L-T Gov't Bonds	Risk Premium
Arithmetic	12.1%	6.0%	6.1%
Geometric	10.2%	5.5%	4.7%

I conclude from this analysis that the expected risk premium is about 6.0 percent (*i.e.*, the average of all three risk premiums: 7.1 percent from Schedule 9; 6.1 percent arithmetic and

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4.7 percent geometric from Duff & Phelps). I believe that a combination of arithmetic and geometric means is appropriate since investors have access to both types of means[27] and presumably, both types are reflected in investment decisions and thus, stock prices and the cost of equity.

Q. PLEASE DEFINE THE CONCEPTS OF ARITHMETIC MEAN AND GEOMETRIC MEAN AND DESCRIBE WHY BOTH ARE RELEVANT TO INVESTORS.

A. The arithmetic mean is the average of period (*e.g.*, annual) changes in a statistic, such as investor returns. The geometric mean is a compound return of a period. The example below describes each for a sample period:

Period	Value	Return
1	$10	
2	$11	10% ($1 return on $10 base)
3	$12	9% ($1 return on $11 base)
4	$11	-8% (-$1 loss on $12 base)
5	$12	9% ($1 return on $11 base)

In this example, the arithmetic return is the average of the annual "Return" figures, which is 5 percent (*i.e.*, 10% +9% - 8% + 9% divided by 4). The arithmetic return thus gives consideration to the return level for each period.

The geometric return is the compound return over the four-year period, in which the value increased from $10 to $12, which is 20 percent over a four-year period, or 4.66 percent. The geometric mean thus is concerned with the total return over the period without consideration of individual period averages.

[27] For example, Value Line uses compound (*i.e.*, geometric) growth rates in its projection. In addition, mutual funds report growth rates on a compound basis.

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Arithmetic returns are always higher than geometric returns. This is the case since the individual period returns in an arithmetic sense are not "compounded" which, in an arithmetic sense, requires that to be higher. Both types of returns are relevant to investors and both are reported to investors. Investors are concerned with period returns, but over a given period of time it is the geometric return that indicates their actual gain or loss. As a result, I consider both in my analyses of the risk premium component.

Q. WHAT ARE YOUR CAPM RESULTS?

A. Schedule 10 shows my CAPM calculations. The results are:

	Mean	Median
Parcell Proxy Group	6.3%	6.3%
Hevert Proxy Group	6.6%	6.5%

Q. WHAT IS YOUR CONCLUSION CONCERNING THE CAPM COST OF EQUITY?

A. The CAPM results collectively indicate a cost of equity of 6.3 percent to 6.6 percent (6.4 percent mid-point) for the groups of proxy utilities. I conclude that an appropriate CAPM cost of equity estimation for DEC is 6.45 percent.

X. CE ANALYSIS

Q. PLEASE DESCRIBE THE BASIS OF THE CE METHODOLOGY.

A. This method is based upon the economic concept of "opportunity cost." As noted previously, the cost of capital is an opportunity cost: the prospective return available to investors from alternative investments of similar risk. If, in the opinion of those who save and commit capital, the prospective return from a given investment is not equal to that available from other investments of similar risk, the available capital will tend to be shifted to the alternative investments. Through this mechanism, opportunity-cost-driven pricing

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signals direct capital to its most productive uses; thus, a free enterprise system promotes an efficient allocation of scarce resources.

The established legal standards are consistent with the opportunity cost principle. The two Supreme Court cases most frequently cited (*Bluefield* and *Hope*) hold that: the return to the equity owners be sufficient to maintain the credit of the enterprise and confidence in its financial integrity; to permit the enterprise to attract required additional capital on reasonable terms; and, to provide the enterprise and its investors with an earnings opportunity commensurate with the returns available on investments in other enterprises having corresponding risks.

These three interrelated criteria constitute a succinct statement of the opportunity cost principle. An expected return on equity equal to that which can be realized on alternative investments of corresponding risk will, in turn, be sufficient to assure confidence in the financial integrity of the enterprise, to maintain its credit, and to permit it to attract new capital on reasonable terms.

The CE method is designed to measure the returns expected to be earned on the original cost book value of similar risk enterprises. Thus, this method provides a direct measure of the fair return, since it translates into practice the competitive principle upon which regulation rests. Thus, it provides a direct measure of the fair return, since it translates into practice the competitive principle upon which regulation rests.

The CE method normally examines the experienced and/or projected return on book common equity. The logic for examining returns on book equity follows from the use of original cost rate base regulation for public utilities, which uses a utility's book common equity to determine the cost of capital. This cost of capital is, in turn, used as the fair rate

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of return which is then applied (multiplied) to the book value of rate base to establish the dollar level of capital costs to be recovered by the utility. This technique is thus consistent with the rate base – rate of return methodology used to set utility rates.

Q. HOW DO YOU APPLY THE CE METHODOLOGY IN YOUR ANALYSIS OF DEC'S COST OF EQUITY?

A. I apply the CE methodology by examining realized returns on equity (ROEs) for the groups of proxy companies, as well as unregulated companies, and evaluating investor acceptance of these returns by reference to the resulting market-to-book ratios ("M/Bs"). In this manner it is possible to assess the degree to which a given level of return equates to the cost of capital. It is generally recognized for utilities that an M/B of greater than one (*i.e.*, 100 percent) reflects a situation where a company is able to attract new equity capital without dilution (*i.e.*, above book value). As a result, one objective of a fair return on equity is the maintenance of stock prices at or above book value. It is also apparent that a utility M/B significantly above 1.0 protects existing shareholders from "dilution" that occurs when new shares of equity are sold for a price less than book value.

I further note that my CE analysis is based upon market data (through the use of M/Bs) and is thus essentially a market test. As a result, my CE analysis is not subject to the criticisms occasionally made by some who maintain that past earned returns do not necessarily represent the cost of capital. In addition, my CE analysis also uses prospective returns and thus is not strictly backward looking.

Q. IS YOUR CE ANALYSIS BASED UPON AN ASSUMPTION THAT ROES ARE THE ONLY FACTOR INFLUENCING STOCK PRICES AND M/BS?

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A. No, it is not. In some past proceedings Mr. Hevert has erroneously stated that my CE analyses are based on my assumption that earned ROEs are the sole determinant of M/Bs. Such a statement is a misrepresentation of my CE analyses. I do not assume that earned ROEs are the sole determinant of M/Bs. Rather, I demonstrate that M/Bs are important to public utilities and they correspondingly reflect investors' assessment of the value of utility stocks relative to their respective book value, which is the basis on which their rates are established by regulatory commissions.

Q. WHAT TIME PERIODS DO YOU EXAMINE IN YOUR CE ANALYSIS?

A. My CE analysis considers the experienced ROEs of the proxy groups of utilities for the period 2002-2018 (*i.e.*, the last 17 years). The CE analysis requires that I examine a relatively long period of time in order to determine trends in earnings over at least a full business cycle. Further, in estimating a fair level of return for a future period, it is important to examine earnings over a diverse period of time in order to avoid any undue influence from unusual or abnormal conditions that may occur in a single year or shorter period. Therefore, in forming my judgment of the current ROE, I focused on two periods: 2009-2018 (the current business cycle) and 2002-2008 (the most recent past business cycle). I have also considered projected ROEs for 2019 and 2021-2023 (*i.e.*, the time periods estimated by Value Line).

Q. PLEASE DESCRIBE YOUR CE ANALYSIS.

A. Schedules 11 and 12 contain summaries of experienced ROEs and M/Bs for three groups of companies, while Schedule 13 presents a risk comparison of utilities versus unregulated firms.

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Schedule 11 shows the achieved ROEs and M/Bs for the groups of proxy utilities. These can be summarized as follows:

	Parcell Proxy Group	Hevert Proxy Group
Historic ROE		
Mean	10.3-10.4%	9.9-10.1%
Median	10.1-10.2%	9.8-10.3%
Historic M/B		
Mean	156-163%	155-166%
Median	147-158%	152-158%
Prospective ROE		
Mean	9.9-10.7%	10.0-10.5%
Median	10.0-11.0%	10.0-10.5%

These results indicate that historic ROEs of 9.8 percent to 10.4 percent have been adequate to produce M/Bs of 147 percent to 166 percent for the groups of utilities. Furthermore, projected ROEs for 2019 and 2021-2023 are within a range of 9.9 percent to 11.0 percent for the utility groups. These relate to 2018 M/Bs of 180 percent or greater.

Q. DO YOU ALSO REVIEW THE EARNINGS OF UNREGULATED FIRMS?

A. Yes. As an alternative, I also examine the S&P's 500 Composite group. This is a well-recognized group of firms that is widely utilized in the investment community and is indicative of the competitive sector of the economy. Schedule 12 presents the earned ROEs and M/Bs for the S&P 500 group over the past 16 years (*i.e.*, 2002-2017). As this schedule indicates, over the two business cycle periods, this group's average ROEs ranged from 12.4 percent to 13.4 percent, with average M/Bs ranging between 242 percent and 275 percent.

Q. HOW CAN THE ABOVE INFORMATION BE USED TO ESTIMATE DEC'S COST OF EQUITY?

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A. The recent ROEs of the proxy utilities and S&P 500 groups can be viewed as an indication of the level of return realized and expected in the regulated and competitive sectors of the economy. In order to apply these returns to the cost of equity for the proxy utilities, however, it is necessary to compare the risk levels of the electric utilities and the competitive companies. I do this in Schedule 13, which compares several risk indicators for the S&P 500 group and the electric utility groups. The information in this exhibit indicates that the S&P 500 group is riskier than the electric utility proxy groups.

Q. WHAT COST OF EQUITY IS INDICATED BY YOUR CE ANALYSIS?

A. Based on recent and prospective ROEs and M/Bs, my CE analysis indicates that the ROE for the proxy utilities is no more than 9.0 percent to 10.0 percent (9.5 percent mid-point). Recent ROEs of 9.8 percent to 10.4 percent have resulted in M/Bs more than 140 percent. Prospective ROEs of 9.9 percent to 11.0 percent have been accompanied by M/Bs over 180 percent. As a result, it is apparent that authorized returns below this level would continue to result in M/Bs of well above 100 percent. As I indicated earlier, the fact that M/Bs substantially exceed 100 percent indicates that historic and prospective ROEs of 9.5 percent reflect earning levels that are well above the actual earned ROE for those regulated companies. I also note that a company whose stock sells above book value can attract capital in a way that enhances the book value of existing stockholders, thus creating a favorable environment for financial integrity. My specific CE recommendation is the mid-point of this range, or 9.5 percent.

XI. RETURN ON EQUITY RECOMMENDATION

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR THREE RETURN ON EQUITY ANALYSES.

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A. My three ROE analyses produced the following recommendations:

	Recommendation
DCF	9.10%
CAPM	6.45%
CE	9.50%

These results indicate an overall broad range of 6.45 percent to 9.50 percent. I recommend a cost of equity range of 9.10 percent to 9.50 percent for DEC. This range includes my DCF result (9.10 percent), and my CE result (9.50 percent). Specifically, I recommend a cost of equity of 9.30 percent for DEC, the mid-point of this range.

Q. IT APPEARS THAT YOUR CAPM RESULTS ARE LESS THAN YOUR DCF AND CE RESULTS. DO YOU DIRECTLY CONSIDER THE CAPM RESULTS IN DETERMINING THE COST OF EQUITY FOR DEC?

A. Not at this time. I have conducted CAPM studies in my cost of equity analyses for many years. It is apparent that the CAPM results are currently significantly less than the DCF and CE results. There are two reasons for the lower CAPM results. First, risk premiums are lower currently than was the case in prior years. This is the result of lower equity returns that have been experienced beginning with the Great Recession and continuing over the past several years. This is also reflective of a decline in investor expectations of equity returns and risk premiums. Second, the level of interest rates on U.S. Treasury bonds (*i.e.*, the risk-free rate) has been lower in recent years. This is partially the result of the actions of the Federal Reserve to stimulate the economy. This also impacts investor expectations of returns in a negative fashion.

I note that, initially, investors may have believed that the decline in Treasury yields was a temporary factor that would soon be replaced by a rise in interest rates. However,

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this has not been the case as interest rates have remained low and continued to decline for the past seven-plus years. As a result, it cannot be maintained that low interest rates (and low CAPM results) are temporary and do not reflect investor expectations. Consequently, the CAPM results should be considered as one factor in determining the cost of equity for DEC. Even though I do not factor the CAPM results directly into my cost of equity recommendation, I do believe these lower results are indicative of the recent and continuing decline in utility costs of capital, including cost of equity.

XII. TOTAL COST OF CAPITAL

Q. WHAT IS THE TOTAL COST OF CAPITAL FOR DEC?

A. Schedule 1 reflects the cost of capital for DEC using my proposed capital structure and embedded cost of debt, as well as my cost of equity recommendations. The resulting total cost of capital is a range of 6.91 percent to 7.12 percent. I recommend a cost of capital of 7.02 percent for DEC, which incorporates a cost of equity of 9.30 percent.

XIII. COMMENTS ON COMPANY TESTIMONY

Q. WHAT COST OF CAPITAL HAS DEC REQUESTED IN ITS APPLICATION?

A. The Company's filing requests a total cost of capital of 7.74 percent, which incorporates a return on equity of 10.50 percent. The 10.50 percent request reflects a 25 basis point downward adjustment from the 10.75 percent requested return on equity as developed in the testimony of DEC witness Robert B. Hevert.

Q. HAVE YOU REVIEWED THE TESTIMONY OF DEC WITNESS ROBERT B. HEVERT?

A. Yes, I have. Mr. Hevert's testimony recommends a range of 10.25 percent to 11.00 percent.

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Q. WHAT IS THE BASIS FOR MR. HEVERT'S COST OF EQUITY RANGE?

A. Mr. Hevert summarizes his cost of equity conclusions are as follows:

DCF Results

	Mean Low	Mean	Mean High
Constant Growth DCF Results			
30-Day Average	8.36%	9.16%	10.08%
90-Day Average	8.39%	9.19%	10.11%
180-Day Average	8.50%	9.30%	10.22%
Multi-Stage DCF Results			
30-Day Average	8.90%	9.09%	9.32%
90-Day Average	8.93%	9.12%	9.35%
180-Day Average	9.05%	9.24%	9.47%

Capital Asset Pricing Model

	Bloomberg Derived Market Risk Premium	Value Line Derived Market Risk Premium
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (3.19%)	8.75%	9.40%
Near-Term Projected 30-Year Treasury (3.52%)	9.07%	9.72%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (3.19%)	11.00%	11.91%
Near-Term Projected 30-Year Treasury (3.52%)	11.32%	12.24%

Bond Yield Plus Risk Premium

	Return on Equity
Current 30-Year Treasury (3.19%)	9.97%
Near-Term Projected 30-Year Treasury (3.52%)	10.03%
Long-Term Projected 30-Year Treasury (4.30%)	10.27%

Q. DO YOU HAVE ANY GENERAL COMMENTS ABOUT MR. HEVERT'S TESTIMONY AND CONCLUSIONS?

A. Yes, I do. Mr. Hevert's testimony significantly overstates DEC's cost of equity. Each of his methods, and virtually all of his inputs into those methods, is systematically

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biased upward in a manner that significantly inflates his cost of equity conclusions. Further, of the 29 cost of equity measures cited in the table above, 25 are less than his 10.75 percent recommendation. In addition, Mr. Hevert's 10.75 percent cost of equity recommendation exceeds all of the state commission-authorized costs of equity in 2016, 2017 and 2018 for electric utilities, exclusive of a single case in Alaska.[28]. Clearly, Mr. Hevert's cost of equity recommendation for DEC is well outside the mainstream of authorized costs of equity for electric utilities and is asking DEC's ratepayers to pay rates incorporating the highest authorized cost of equity in the United States in recent times.

Q. WHAT ARE YOUR DISAGREEMENTS WITH MR. HEVERT'S CONSTANT GROWTH DCF ANALYSES?

A. Mr. Hevert's constant growth DCF analyses are based on 30-day, 90-day, and 180-day average stock prices for the periods ending October 12, 2018, annualized dividends per share as of October 12, 2018 and the average of Value Line, First Call and Zack's EPS projections. His DCF analyses are applied to his proxy group of 20 electric utilities.

Mr. Hevert's constant growth DCF analyses are shown on his Exhibit RBH-1. It is apparent from a review of his exhibit that his "Low DCF ROE" for each proxy company reflects the dividend yield and the lowest of the three growth rates he considers. His "Mean DCF ROE" considers the average of all three growth rates and his "High DCF ROE" only considers the highest growth rate for each company. Stated differently, the "High DCF" result considers only the highest of the three growth rates for each company and ignores the other two growth rates. Thus, the "Mean High DCF" result for one proxy company may reflect only the Zacks EPS Growth, while the "Mean High DCF" result for another

[28] See Exhibit No. RBH-6.

proxy company may reflect only the Value Line growth result. The prior table shows that none of Mr. Hevert's DCF constant growth and multi-stage results are as high as 10.25 percent lower end of his cost of capital conclusions.

Q. IS IT APPROPRIATE TO FOCUS ON THE HIGHEST GROWTH RATE, ON A COMPANY-TO COMPANY BASIS, TO DETERMINE THE COST OF EQUITY FOR AN ELECTRIC UTILITY SUCH AS DEC?

A. No. It is neither realistic nor appropriate to focus on a single growth rate for each proxy company in a DCF context, especially when one "cherry picks" the highest growth rate for each company from among the different growth rate indicators that reflect the highest growth rate for each company. As I indicated above, Mr. Hevert's analyses focus only on methods and data that produce the highest results.

Q. ARE THERE ANY OTHER PROBLEMS WITH MR. HEVERT'S CONSTANT GROWTH DCF ANALYSES?

A. Yes. Even though Mr. Hevert purports to examine three alternative growth rates in his constant growth DCF analyses, in reality all of the three focuses on a single statistic: analysts' EPS forecasts.

Q. WHY IS IT IMPROPER TO RELY EXCLUSIVELY ON EPS FORECASTS IN A DCF ANALYSIS?

A. There are several reasons why it is not appropriate to rely exclusively on analysts' forecasts in a DCF context. First, it is not realistic to believe that investors rely exclusively on a single factor, such as analysts' forecasts, in making their investment decisions. Investors have an abundance of available information to assist them in evaluating stocks; EPS forecasts are only one of many such statistics.

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Second, Value Line – one of Mr. Hevert's sources of EPS projections – publishes both historic and forecasted data, as well as ratios, for a large array of financial indicators for publicly-traded companies. Presumably, all types of information are published for the consideration of its subscribers/investors. Yet Mr. Hevert primarily considers only one factor, the forecast version of EPS, in his analyses.

Third, the vast majority of information available to investors, by both individual companies in the form of annual reports and offering circulars, and by investment publications such as Value Line, is historic data. It is neither realistic nor logical to maintain the investors only consider projected (estimated) data to the exclusion of historic (actual) data.

Fourth, the experience over the past several years should be a clear signal to investors that analysts cannot accurately predict EPS levels. Few, if any, analysts predicted the decline in security prices in the tech market crash of 2000-2002, as well as the financial crisis of 2008 and 2009.[29] Thus, relying exclusively on forecasted EPS levels, while ignoring historic EPS levels and other indicators, cannot and will not produce accurate results.

In summary, investors are now very much aware of recent inabilities of security analysts to accurately predict EPS growth. These problems clearly call into question the exclusive reliance on analysts' forecasts as the only source of growth in a DCF context. As a result, the landscape has changed in recent years and investors have ample reasons to

[29]As demonstration of this, see "Security Analysts and their Recommendations", (http://thismatter.com/money/stocks/valuation/security-analysts.htm).

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doubt the reliability of such forecasts at the present time. In light of the above, it is problematic to rely exclusively on such forecasts in determining the cost of equity for DEC.

Q. ARE YOU AWARE OF ANY RECENT ANALYSES AND COMMENTS ON THE ACCURACY OF ANALYSTS' FORECASTS?

A. Yes, I am. A 2010 study by McKinsey & Company, titled, "Equity Analysts: Still Too Bullish"[30] concludes that "after almost a decade of stricter regulation, analysts' earnings forecasts continue to be excessively optimistic." The significance of this study, as well as the points I raised previously, is that investors should be hesitant to rely exclusively on analysts' forecasts in making investment decisions.

Q. HAS THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION ISSUED ANY REPORTS THAT ADDRESS THE EXCLUSIVE RELIANCE ON ANALYSTS' RECOMMENDATIONS?

A. Yes. In a 2010 "Investor Alert: Analyzing Analyst Recommendations" the Securities and Exchange Commission ("SEC")[31] made the following statement:

> As a general matter, investors should not rely solely on an analyst's recommendation when deciding whether to buy, hold, or sell a stock. Instead, they should also do their own research – such as reading the prospectus for new companies or for public companies, the quarterly and annual reports filed with the SEC – to confirm whether a particular investment is appropriate for them in light of their individual financial circumstances.

This SEC "Investor Alert" also cites the potential conflicts of interest that analysts face.

This "Investor Alert" thus also calls into question the exclusive reliance on analysts' forecasts, as proposed by Mr. Hevert.

[30] McKinsey & Company, McKinsey on Finance "Equity Analysts: Still Too Bullish", No. 35, Spring 2010.
[31] http://www.sec.gov/investor/pubs/Analysts.htm.

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Q. WHAT IS YOUR RESPONSE TO MR. HEVERT'S MULTI-STAGE DCF ANALYSES?

A. Mr. Hevert's multi-stage DCF analyses use EPS forecasts as Stage 1 (short-term) and Gross Domestic Product ("GDP") growth as Stage 3 (long-term), with Stage 2 being a transition.

I have previously indicated that his first stage (*i.e.*, EPS forecasts) over-states the ROE. As a result, the first stage of his multi-stage DCF results in excessive ROE conclusions. In addition, Mr. Hevert's long-term growth rate of 5.46 percent is excessive.

Q. WHAT IS THE SOURCE OF THIS 5.46 PERCENT GDP GROWTH FIGURE?

A. Mr. Hevert's 5.46 percent long-term growth rate is the result of his combination of 1929-2017 "real growth" of GDP (3.22 percent) and a 2.17 percent inflation rate.

Q. IS THERE ANYTHING INCONSISTENT WITH MR. HEVERT'S USE OF HISTORIC GDP GROWTH IN HIS DCF ANALYSES?

A. Yes, there is. All of Mr. Hevert's growth rates in his constant growth DCF analyses (*i.e.*, EPS growth) reflect projections of future growth. On the other hand, Mr. Hevert only uses historic growth rates in his real GDP growth input. Apparently, Mr. Hevert believes it is not proper to use historic growth rates of financial indicators (*i.e.*, EPS growth), but it is proper to use only historic growth rates in his real GDP input. This demonstrates a significant inconsistency in Mr. Hevert's analyses. Again, this demonstrates Mr. Hevert's consistent pattern of choosing data and methodologies that result in the highest cost of equity conclusions.

Q. ARE YOU AWARE OF ANY PROJECTIONS OF GDP GROWTH?

A. Yes, I am. There are at least two sources of projections of GDP growth. These are:

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- Social Security Administration (SSA), and
- Energy Information Administration (EIA).

The two organizations cited above are U.S. government-sponsored organizations.

Q. WHAT ARE THE PROJECTIONS OF LONG-TERM GDP GROWTH BY THESE TWO ORGANIZATIONS?

A. The projections of long-term gross GDP growth by these two organizations are:

- SSA – 2020-2088: 4.32% (see Schedule 14)
- EIA – 2016-2050: 4.2% (see Schedule 14)

Each of these projections is more than 100 basis points below the 5.46 percent GDP figure used by Mr. Hevert.

Q. WOULD IT BE MORE APPROPRIATE FOR MR. HEVERT TO USE HISTORIC OR PROJECTED GROWTH RATES OF GDP IN MR. HEVERT'S DCF ANALYSIS?

A. It would have been appropriate for Mr. Hevert to use projections of GDP growth, since he is using projections of the other growth rate indicators.

Q. IS IT REASONABLE TO BELIEVE THAT INVESTORS WOULD EXPECT GDP GROWTH TO BE 5.46 PERCENT, IN SPITE OF THE MUCH LOWER PROJECTIONS BY THE U.S. GOVERNMENT FORECASTING ORGANIZATIONS?

A. No, it is not. Instead, investors reasonably rely on the government's forecasts of GDP as the most unbiased and reliable estimates.

Q. ARE YOU AWARE OF ANY UTILITY REGULATORY AGENCIES THAT UTILIZE GDP GROWTH AS A COMPONENT IN A DCF ANALYSIS?

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A. The only regulatory agency of which I am aware that directly and formally uses GDP growth in a DCF context is the Federal Energy Regulatory Commission ("FERC"). The FERC uses a two-stage DCF model in establishing the cost of equity for interstate natural gas pipelines and, more recently, electric utilities. The first stage of the FERC two-stage DCF model uses 5-year EPS forecasts, while the second stage uses GDP projections for six to 25 years or more into the future. Recent FERC long-term GDP projections have been about 4.4 percent.[32] The FERC assigns a one-third weighting to the long-term growth rate and two-thirds weighting to the short-term growth rate.

Q. ARE YOU AWARE OF ANY REGULATORY AGENCIES THAT USE HISTORIC GDP GROWTH IN A DCF CONTEXT?

A. No, not in the same context as Mr. Hevert.

Q. DO YOU HAVE ANY COMMENTS CONCERNING MR. HEVERT'S CAPM ANALYSES?

A. Yes, I do. I disagree with Mr. Hevert's use of projected interest rates as his risk-free rate CAPM component. I also disagree with his risk premium estimates.

Q. WHY IS IT NOT PROPER TO USE PROJECTED INTEREST RATES AS THE RISK-FREE RATE?

A. It is proper to use the current (*i.e.*, actual) yield as the risk-free rate in a CAPM context. This is the case since the current yield is known and measurable and reflects investors' current collective assessment of all capital market conditions. Prospective interest rates, in contrast, are not measurable and not achievable. For example, if the current yield on 30-year U.S. Treasury Bonds is 3.0 percent, this reflects the rate that

[32] FERC Opinion No. 551, dated September 28, 2016, at paragraph 21.

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investors can actually receive on their investment. Investors cannot receive a prospective yield on their investments since such a yield is not actual but rather speculative.

Use of the current risk-free rate in a CAPM context is similar to using the current yield in a DCF context. Analysts do not use prospective stock prices as the basis for the dividend yield in a DCF analysis, as use of prospective stock prices is speculative. Use of current stock prices is appropriate, as are used by Mr. Hevert. Likewise, current levels of interest rates reflect all current information (*i.e.*, the efficient market hypothesis) and should be used as the risk-free rate in the CAPM.

It should be noted that Mr. Hevert's use of projected long-term interest rates (*i.e.*, 30-Year Treasury Bond rates of 3.52 percent) greatly exceed the current interest rate of long-term government bonds, which are about 3.0 percent at the present time.

Q. WHAT ARE YOUR CONCERNS WITH MR. HEVERT'S MARKET RISK PREMIUM COMPONENT?

A. Mr. Hevert computes his market risk premium by calculating constant growth DCFs for the S&P 500 companies of 15.29 percent to 16.71 percent [33] (using EPS forecasts as the growth component) of 13.70 percent and comparing this to current yields on 30-year U.S. Treasury securities. I have previously indicated that his DCF methodology over-states the cost of capital. In addition, his use of U.S. Treasury securities as the baseline for the market risk premium is improper at this time due to the effects of the Federal Reserve's Quantitative Easing on U.S. Treasury yields, which I describe in more detail above.

Q. WHAT ARE YOUR RESPONSES TO MR. HEVERT'S BOND YIELD PLUS RISK PREMIUM ANALYSIS?

[33] Exhibit No. RBH-3, pages 1 and 7.

A. Mr. Hevert's risk premium approach compares the allowed ROEs for electric utilities and 30-Year U.S. Government Bond yields over the period 1980 to October 12, 2018. He applies this regression result to various projected levels of 30-year U.S. Treasury Bonds and correspondingly arrives at his 9.97 percent to 10.27 percent conclusion.

Mr. Hevert's bond yield plus risk premium analysis suffers from the same deficiencies as his market risk premium and CAPM analyses. This is demonstrated by the fact that of the 127 electric decisions since 2015 that were used in part to develop his risk premium,[34] only 25 were above the 9.97 percent low end of his risk premium result and only five were as high as the 10.27 percent upper end.

Q. ON PAGES 42-66 OF HIS DIRECT TESTIMONY, MR. HEVERT CITES SEVERAL "ADDITIONAL FACTORS THAT MUST BE TAKEN INTO CONSIDERATION WHEN DETERMINING WHERE THE COMPANY'S COST OF EQUITY FALLS WITHIN THE RANGE OF RESULTS." DO YOU HAVE ANY RESPONSES TO THIS ASSERTION?

A. Yes, I do. Mr. Hevert has identified several "factors" that he maintains create more risk for DEC relative to his proxy electric utilities. These include:

1) Generation Portfolio;
2) Significant capital expenditure plan;
3) Risk of severe weather;
4) Risk associated with regulatory environment; and
5) Cost of issuing common stock.

[34] Exhibit RRH-6.

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However, each of these factors is considered by the rating agencies in their assignment of credit ratings to DEC, thus Mr. Hevert's consideration of these factors is redundant. As I indicated previously, DEC has higher Moody's credit ratings, reflecting lower risk, compared to the typical electric utility, including Mr. Hevert's proxy group. Stated differently, DEC is perceived to have lower total risks than the typical electric utility, including Mr. Hevert's proxy group, in spite of the existence of Mr. Hevert's risk "factors." This is particularly notable in light the fact that Mr. Hevert's risk "factors" are common across the industry and are not unique to DEC. The risk "factors" are already "baked into the cake". Consequently, there is no justification for providing DEC a higher return on equity relative to that of other similar electric utilities. Finally, I note that Mr. Hevert acknowledges that credit rating agencies recognize certain of these risks.[35]

Q. CAN YOU PROVIDE AN EXAMPLE OF RATING AGENCY RECOGNITION OF THOSE FACTORS IN ESTABLISHING DEC'S SECURITY RATINGS?

A. Yes, I can. As I noted previously, DEC's security ratings have been the same for the past several years. It is the responsibility of the rating agencies to give consideration to all relevant factors in assigning ratings. As a result, for example, it is apparent that any perceived risk due to DEC's generation portfolio, weather considerations, capital expenditures, and regulatory environment are already considered by the rating agencies and therefore are reflected in DEC's double A ratings. As noted previously, DEC has superior security ratings relative to other electric utilities.

Q. MR. HEVERT CITES THIS NEED TO CONSIDER A FLOTATION COST ADJUSTMENT TO HIS ROE MODEL RESULTS. IS THIS PROPER?

[35] Direct Testimony of Robert B. Hevert, pages 55-56.

A. No, it is not. There has been no demonstration that DE has or intends to issue new common equity for the purpose of infusing equity into DEC. As noted previously DEC has a higher equity ratio than DE, which indicates that other portions of DE have less equity. Thus, there is no need to further fund DEC's equity rather than the more heavily debt-financed portion of DE.

In addition, should DE issue new shares of common stock, the existence of its stock well above book value indicates that existing shareholders will have their book value enhanced. Thus, there is no need for any further return associated with flotation costs, to the extent they exist.

Q. WILL YOU UPDATE YOUR TESTIMONY BASED ON INFORMATION THAT BECOMES AVAILABLE?

A. Yes. ORS fully reserves the right to revise its recommendations via supplemental testimony should new information not previously provided by the Company, or other sources, become available.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

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BACKGROUND AND EXPERIENCE PROFILE
DAVID C. PARCELL, MBA, CRRA
PRESIDENT/SENIOR ECONOMIST

EDUCATION

1985	M.B.A., Virginia Commonwealth University
1970	M.A., Economics, Virginia Polytechnic Institute and State University, (Virginia Tech)
1969	B.A., Economics, Virginia Polytechnic Institute and State University, (Virginia Tech)

POSITIONS

Present	Principal, Technical Associates, Inc.
2007-2016	President, Technical Associates, Inc.
1995-2007	Executive Vice President and Senior Economist, Technical Associates, Inc.
1993-1995	Vice President and Senior Economist, C. W. Amos of Virginia
1972-1993	Vice President and Senior Economist, Technical Associates, Inc.
1969-1972	Research Economist, Technical Associates, Inc.
1968-1969	Research Associate, Department of Economics, Virginia Polytechnic Institute and State University

ACADEMIC HONORS

Omicron Delta Epsilon - Honor Society in Economics
Beta Gamma Sigma - National Scholastic Honor Society of Business Administration
Alpha Iota Delta - National Decision Sciences Honorary Society
Phi Kappa Phi - Scholastic Honor Society

PROFESSIONAL DESIGNATIONS

Certified Rate of Return Analyst - Founding Member

RELEVANT EXPERIENCE

Financial Economics -- Advised and assisted many Virginia banks and savings and loan associations on organizational and regulatory matters. Testified approximately 25 times before the Virginia State Corporation Commission and the Regional Administrator of National Banks on matters related to branching and organization for banks, savings and loan associations, and consumer finance companies. Advised financial institutions on interest rate structure and loan maturity. Testified before Virginia State Corporation Commission on maximum rates for consumer finance companies.

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Testified before several committees and subcommittees of Virginia General Assembly on numerous banking matters.

Clients have included First National Bank of Rocky Mount, Patrick Henry National Bank, Peoples Bank of Danville, Blue Ridge Bank, Bank of Essex, and Signet Bank.

Published articles in law reviews and other periodicals on structure and regulation of banking/financial services industry.

Utility Economics -- Performed numerous financial studies of regulated public utilities. Testified in over 550 cases before some fifty state and federal regulatory agencies.

Prepared numerous rate of return studies incorporating cost of equity determination based on DCF, CAPM, comparable earnings and other models. Developed procedures for identifying differential risk characteristics by nuclear construction and other factors.

Conducted studies with respect to cost of service and indexing for determining utility rates, the development of annual review procedures for regulatory control of utilities, fuel and power plant cost recovery adjustment clauses, power supply agreements among affiliates, utility franchise fees, and use of short-term debt in capital structure.

Presented expert testimony before federal regulatory agencies Federal Energy Regulatory Commission, Federal Power Commission, and National Energy Board (Canada), state regulatory agencies in Alabama, Alaska, Arizona, Arkansas, California, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Ontario (Canada), Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, West Virginia, Washington, Wisconsin, U.S. Virgin Islands, and Yukon Territory (Canada).

Published articles in law reviews and other periodicals on the theory and purpose of regulation and other regulatory subjects.

Clients served include state regulatory agencies in Alaska, Arizona, Delaware, Georgia, Mississippi, Missouri, New Hampshire, North Carolina, Ontario (Canada), South Carolina, U.S. Virgin Islands, Virginia and Washington; consumer advocates and attorneys general in Alabama, Arizona, District of Columbia, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maryland, Nevada, New Jersey, New Mexico, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, and West Virginia; federal agencies including Defense Communications Agency, the Department of Energy, Department of the Navy, and General Services Administration; and various organizations such as Bath Iron Works, Illinois Citizens' Utility Board, Illinois Governor's Office of Consumer Services, Illinois Small Business Utility Advocate, Wisconsin's Environmental Decade, Wisconsin's Citizens Utility Board, Old Dominion Electric Cooperative, and industrial customers.

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Insurance Economics -- Conducted analyses of the relationship between the investment income earned by insurance companies on their portfolios and the premiums charged for insurance. Analyzed impact of diversification on financial strength of Blue Cross/Blue Shield Plans in Virginia.

Conducted studies of profitability and cost of capital for property/casualty insurance industry. Evaluated risk of and required return on surplus for various lines of insurance business.

Presented expert testimony before Virginia State Corporation Commission concerning cost of capital and expected gains from investment portfolio. Testified before insurance bureaus of Maine, Massachusetts, New Jersey, North Carolina, Rhode Island, South Carolina and Vermont concerning cost of equity for insurance companies.

Prepared cost of capital and investment income return analyses for numerous insurance companies concerning several lines of insurance business. Analyses used by Virginia Bureau of Insurance for purposes of setting rates.

Special Studies -- Conducted analyses which evaluated the financial and economic implications of legislative and administrative changes. Subject matter of analyses include returnable bottles, retail beer sales, wine sales regulations, taxi-cab taxation, and bank regulation. Testified before several Virginia General Assembly subcommittees.

Testified before Virginia ABC Commission concerning economic impact of mixed beverage license.

Clients include Virginia Beer Wholesalers, Wine Institute, Virginia Retail Merchants Association, and Virginia Taxicab Association.

Franchise, Merger & Anti-Trust Economics -- Conducted studies on competitive impact on market structures due to joint ventures, mergers, franchising and other business restructuring. Analyzed the costs and benefits to parties involved in mergers. Testified in federal courts and before banking and other regulatory bodies concerning the structure and performance of markets, as well as on the impact of restrictive practices.

Clients served include Dominion Bankshares, asphalt contractors, and law firms.

Transportation Economics -- Conducted cost of capital studies to assess profitability of oil pipelines, trucks, taxicabs and railroads. Analyses have been presented before the Federal Energy Regulatory Commission and Alaska Pipeline Commission in rate proceedings. Served as a consultant to the Rail Services Planning Office on the reorganization of rail services in the U.S.

Economic Loss Analyses -- Testified in federal courts, state courts, and other adjudicative forums regarding the economic loss sustained through personal and business injury whether due to bodily harm, discrimination, non-performance, or anticompetitive practices. Testified on economic loss

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to a commercial bank resulting from publication of adverse information concerning solvency. Testimony has been presented on behalf of private individuals and business firms.

MEMBERSHIPS

American Economic Association
Virginia Association of Economists
Richmond Society of Financial Analysts
Financial Analysts Federation
Society of Utility and Regulatory Financial Analysts

Board of Directors	1992-2000
Secretary/Treasurer	1994-1998
President	1998-2000

RESEARCH ACTIVITY

Books and Major Research Reports

"Stock Price As An Indicator of Performance," Master of Arts Thesis, Virginia Tech, 1970.

"Revision of the Property and Casualty Insurance Ratemaking Process Under Prior Approval in the Commonwealth of Virginia," prepared for the Bureau of Insurance of the Virginia State Corporation Commission, with Charles Schotta and Michael J. Ileo, 1971.

"An analysis of the Virginia Consumer Finance Industry to Determine the Need for Restructuring the Rate and Size Ceilings on Small Loans in Virginia and the Process by which They are Governed," prepared for the Virginia Consumer Finance Association, with Michael J. Ileo, 1973.

State Banks and the State Corporation Commission: A Historical Review, Technical Associates, Inc., 1974.

"A Study of the Implications of the Sale of Wine by the Virginia Department of Alcoholic Beverage Control", prepared for the Virginia Wine Wholesalers Association, Virginia Retail Merchants Association, Virginia Food Dealers Association, Virginia Association of Chain Drugstores, Southland Corporation, and the Wine Institute, 1983.

"Performance and Diversification of the Blue Cross/Blue Shield Plans in Virginia: An Operational Review", prepared for the Bureau of Insurance of the Virginia State Corporation Commission, with Michael J. Ileo and Alexander F. Skirpan, 1988.

The Cost of Capital - A Practitioners' Guide, Society of Utility and Regulatory Financial Analysts, 2010 (previous editions in 1991, 1992, 1993, 1994, 1995 and 1997).

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Papers Presented and Articles Published

"The Differential Effect of Bank Structure on the Transmission of Open Market Operations," Western Economic Association Meeting, with Charles Schotta, 1971.

"The Economic Objectives of Regulation: The Trend in Virginia," (with Michael J. Ileo), William and Mary Law Review, Vol. 14, No. 2, 1973.

"Evolution of the Virginia Banking Structure, 1962-1974: The Effects of the Buck-Holland Bill", (with Michael J. Ileo), William and Mary Law Review, Vol. 16, No. 3, 1975.

"Banking Structure and Statewide Branching: The Potential for Virginia", William and Mary Law Review, Vol. 18, No. 1, 1976.

"Bank Expansion and Electronic Banking: Virginia Banking Structure Changes Past, Present, and Future," William and Mary Business Review," Vol. 1, No. 2, 1976.

"Electronic Banking - Wave of the Future?" (with James R. Marchand), Journal of Management and Business Consulting, Vol. 1, No. 1, 1976.

"The Pricing of Electricity" (with James R. Marchand), Journal of Management and Business Consulting, Vol. 1, No. 2, 1976.

"The Public Interest - Bank and Savings and Loan Expansion in Virginia" (with Richard D. Rogers), University of Richmond Law Review, Vol. 11, No. 3, 1977.

"When Is It In the 'Public Interest' to Authorize a New Bank?", University of Richmond Law Review, Vol. 13, No. 3, 1979.

"Banking Deregulation and Its Implications on the Virginia Banking Structure," William and Mary Business Review, Vol. 5, No. 1, 1983.

"The Impact of Reciprocal Interstate Banking Statutes on The Performance of Virginia Bank Stocks", with William B. Harrison, Virginia Social Science Journal, Vol. 23, 1988.

"The Financial Performance of New Banks in Virginia", Virginia Social Science Journal, Vol. 24, 1989.

"Identifying and Managing Community Bank Performance After Deregulation", with William B. Harrison, Journal of Managerial Issues, Vol. II, No. 2, Summer 1990.

"The Flotation Cost Adjustment To Utility Cost of Common Equity - Theory, Measurement and Implementation," presented at Twenty-Fifth Financial Forum, National Society of Rate of Return Analysts, Philadelphia, Pennsylvania, April 28, 1993.

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Biography of Myon Edison Bristow, Dictionary of Virginia Biography, Volume 2, 2001.

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DUKE ENERGY CAROLINAS, LLC
TOTAL COST OF CAPITAL
AS OF DECEMBER 31, 2017

Capital Item	Percent 1/	Cost Rate			Weighted Cost		
Long-Term Debt	47.00%		4.44% 2/			2.09%	
Common Equity	53.00%	9.10%	**9.30%**	9.50%	4.82%	4.93%	5.04%
Total Capital	100.00%				6.91%	**7.02%** **(With 9.3% ROE)**	7.12%

1/ Capital structure requested by Duke Energy Carolinas, LLC.

2/ Updated cost of long-term debt for Duke Energy Carolinas, LLC, to reflect re-financing of long-term debt retiring in 2018, as provided in response to SC Office of Regulatory Staff Twenty-Fifth Utility Rates Request, Item No. 25-5.

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ECONOMIC INDICATORS

Period	Real GDP * Growth	Industrial Production Growth	Unemployment Rate	Consumer Price Index
		1975 - 1982 Cycle		
1975	-0.2%	-8.9%	8.5%	7.0%
1976	5.4%	10.8%	7.7%	4.8%
1977	4.6%	5.9%	7.1%	6.8%
1978	5.6%	5.7%	6.1%	9.0%
1979	3.2%	4.4%	5.8%	13.3%
1980	-0.2%	-1.9%	7.1%	12.4%
1981	2.6%	1.9%	7.6%	8.9%
1982	-1.9%	-4.4%	9.7%	3.8%
		1983 - 1991 Cycle		
1983	4.6%	3.7%	9.6%	3.8%
1984	7.3%	9.3%	7.5%	3.9%
1985	4.2%	1.7%	7.2%	3.8%
1986	3.5%	0.9%	7.0%	1.1%
1987	3.5%	4.9%	6.2%	4.4%
1988	4.2%	4.5%	5.5%	4.4%
1989	3.7%	1.8%	5.3%	4.6%
1990	1.9%	-0.2%	5.6%	6.1%
1991	-0.1%	-2.0%	6.8%	3.1%
		1992 - 2001 Cycle		
1992	3.6%	3.1%	7.5%	2.9%
1993	2.7%	3.4%	6.9%	2.7%
1994	4.0%	5.5%	6.1%	2.7%
1995	2.7%	4.8%	5.6%	2.5%
1996	3.8%	4.3%	5.4%	3.3%
1997	4.5%	7.3%	4.9%	1.7%
1998	4.5%	5.8%	4.5%	1.6%
1999	4.7%	4.5%	4.2%	2.7%
2000	4.1%	4.0%	4.0%	3.4%
2001	1.0%	-3.4%	4.7%	1.6%
		2002 - 2009		
2002	1.8%	0.2%	5.8%	2.4%
2003	2.8%	1.2%	6.0%	1.9%
2004	3.8%	2.3%	5.5%	3.3%
2005	3.3%	3.2%	5.1%	3.4%
2006	2.7%	2.2%	4.6%	2.5%
2007	1.8%	2.5%	4.6%	4.1%
2008	-0.1%	-3.5%	5.8%	0.1%
2009	-2.5%	-11.5%	9.3%	2.7%
		Current Cycle		
2010	2.6%	5.5%	9.6%	1.5%
2011	1.6%	3.1%	8.9%	3.0%
2012	2.2%	3.0%	8.1%	1.7%
2013	1.8%	2.0%	7.4%	1.5%
2014	2.5%	3.1%	6.2%	0.8%
2015	2.9%	-1.0%	5.3%	0.7%
2016	1.6%	-1.9%	4.9%	2.1%
2017	2.2%	1.6%	4.4%	2.1%
2018		4.1%	3.9%	1.9%
Q1	2.2%	3.4%	4.1%	2.4%
Q2	4.2%	3.4%	3.9%	2.0%
Q3	3.4%	5.0%	3.8%	2.0%
Q4		4.1%	3.8%	0.8%

* GDP = Gross Domestic Product.

Note that certain series of data are periodically revised.

Sources: Council of Economic Advisers, Economic Indicators, various issues, certain earlier year data from sources used by this publication.

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INTEREST RATES

Period	Prime Rate	U.S. Treasury T Bills 3 Months	U.S. Treasury T Bonds 10 Year	Utility Bonds Aa	Utility Bonds A	Utility Bonds Baa
			1975 - 1982 Cycle			
1975	7.86%	5.84%	7.99%	9.44%	10.09%	10.96%
1976	6.84%	4.99%	7.61%	8.92%	9.29%	9.82%
1977	6.83%	5.27%	7.42%	8.43%	8.61%	9.06%
1978	9.06%	7.22%	8.41%	9.10%	9.29%	9.62%
1979	12.67%	10.04%	9.44%	10.22%	10.49%	10.96%
1980	15.27%	11.51%	11.46%	13.00%	13.34%	13.95%
1981	18.89%	14.03%	13.93%	15.30%	15.95%	16.60%
1982	14.86%	10.69%	13.00%	14.79%	15.86%	16.45%
			1983 - 1991 Cycle			
1983	10.79%	8.63%	11.10%	12.83%	13.66%	14.20%
1984	12.04%	9.58%	12.44%	13.66%	14.03%	14.53%
1985	9.93%	7.48%	10.62%	12.06%	12.47%	12.96%
1986	8.33%	5.98%	7.68%	9.30%	9.58%	10.00%
1987	8.21%	5.82%	8.39%	9.77%	10.10%	10.53%
1988	9.32%	6.69%	8.85%	10.26%	10.49%	11.00%
1989	10.87%	8.12%	8.49%	9.56%	9.77%	9.97%
1990	10.01%	7.51%	8.55%	9.65%	9.86%	10.06%
1991	8.46%	5.42%	7.86%	9.09%	9.36%	9.55%
			1992 - 2001 Cycle			
1992	6.25%	3.45%	7.01%	8.55%	8.69%	8.86%
1993	6.00%	3.02%	5.87%	7.44%	7.59%	7.91%
1994	7.15%	4.29%	7.09%	8.21%	8.31%	8.63%
1995	8.83%	5.51%	6.57%	7.77%	7.89%	8.29%
1996	8.27%	5.02%	6.44%	7.57%	7.75%	8.16%
1997	8.44%	5.07%	6.35%	7.54%	7.60%	7.95%
1998	8.35%	4.81%	5.26%	6.91%	7.04%	7.26%
1999	8.00%	4.66%	5.65%	7.51%	7.62%	7.88%
2000	9.23%	5.85%	6.03%	8.06%	8.24%	8.36%
2001	6.91%	3.44%	5.02%	7.59%	7.78%	8.02%
			2002 - 2009			
2002	4.67%	1.62%	4.61%	7.19%	7.37%	8.02%
2003	4.12%	1.02%	4.01%	6.40%	6.58%	6.84%
2004	4.34%	1.38%	4.27%	6.04%	6.16%	6.40%
2005	6.19%	3.16%	4.29%	5.44%	5.65%	5.93%
2006	7.96%	4.73%	4.80%	5.84%	6.07%	6.32%
2007	8.05%	4.41%	4.63%	5.94%	6.07%	6.33%
2008	5.09%	1.48%	3.66%	6.18%	6.53%	7.25%
2009	3.25%	0.16%	3.26%	5.75%	6.04%	7.06%
			Current Cycle			
2010	3.25%	0.14%	3.22%	5.24%	5.46%	5.96%
2011	3.25%	0.06%	2.78%	4.78%	5.04%	5.57%
2012	3.25%	0.09%	1.80%	3.83%	4.13%	4.86%
2013	3.25%	0.06%	2.35%	4.24%	4.47%	4.98%
2014	3.25%	0.03%	2.54%	4.19%	4.28%	4.80%
2015	3.26%	0.06%	2.14%	4.00%	4.12%	5.03%
2016	3.51%	0.33%	1.84%	3.73%	3.93%	4.69%
2017	4.10%	0.94%	2.33%	3.82%	4.00%	4.38%
2018	4.91%	1.94%	2.91%	4.09%	4.25%	4.67%
Jan	4.50%	1.43%	2.58%	3.69%	3.86%	4.18%
Feb	4.50%	1.53%	2.86%	3.94%	4.09%	4.42%
Mar	4.75%	1.70%	2.84%	3.97%	4.13%	4.52%
Apr	4.75%	1.76%	2.87%	3.99%	4.17%	4.58%
May	4.75%	1.87%	2.98%	4.10%	4.28%	4.71%
Jun	5.00%	1.91%	2.91%	4.11%	4.27%	4.71%
Jul	5.00%	1.96%	2.89%	4.10%	4.27%	4.67%
Aug	5.00%	2.03%	2.89%	4.08%	4.26%	4.64%
Sep	5.25%	2.13%	3.00%	4.18%	4.32%	4.74%
Oct	5.25%	2.24%	3.15%	4.31%	4.45%	4.91%
Nov	5.25%	2.34%	3.12%	4.40%	4.52%	5.03%
Dec	5.50%	2.38%	2.83%	4.24%	4.37%	4.92%
2019						
Jan	5.50%			4.18%	4.35%	4.91%

Sources: Council of Economic Advisers, Economic Indicators, various issues, Mergent Bond Record.

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STOCK PRICE INDICATORS

Period	S&P Composite	NASDAQ Composite	Dow Jones Industrials	S&P E/P
		1975 - 1982 Cycle		
1975			802.49	9.15%
1976			974.92	8.90%
1977			894.63	10.79%
1978			820.23	12.03%
1979			844.40	13.46%
1980			891.41	12.86%
1981			932.92	11.96%
1982			844.36	11.60%
		1983 - 1991 Cycle		
1983			1,190.34	8.03%
1984			1,178.48	10.02%
1985			1,328.23	8.12%
1986			1,792.76	6.09%
1987			2,275.99	5.48%
1988	265.79		2,060.82	8.01%
1989	322.84		2,508.91	7.42%
1990	334.59		2,678.94	6.47%
1991	376.18	491.69	2,929.33	4.79%
		1992 - 2001 Cycle		
1992	415.74	599.26	3,284.29	4.22%
1993	451.41	715.16	3,522.06	4.46%
1994	460.33	751.65	3,793.77	5.83%
1995	541.64	925.19	4,493.76	6.09%
1996	670.83	1,164.96	5,742.89	5.24%
1997	872.72	1,469.49	7,441.15	4.57%
1998	1,085.50	1,794.91	8,625.52	3.46%
1999	1,327.33	2,728.15	10,464.88	3.17%
2000	1,427.22	2,783.67	10,734.90	3.63%
2001	1,194.18	2,035.00	10,189.13	2.95%
		2002 - 2009		
2002	993.94	1,539.73	9,226.43	2.92%
2003	965.23	1,647.17	8,993.59	3.84%
2004	1,130.65	1,986.53	10,317.39	4.89%
2005	1,207.23	2,099.32	10,547.67	5.36%
2006	1,310.46	2,263.41	11,408.67	5.78%
2007	1,476.66	2,577.12	13,169.98	5.29%
2008	1,220.89	2,162.46	11,252.61	3.54%
2009	946.73	1,841.03	8,876.15	1.86%
		Current Cycle		
2010	1,139.31	2,347.70	10,662.80	6.04%
2011	1,268.89	2,680.42	11,966.36	6.77%
2012	1,379.56	2,965.77	12,967.08	6.20%
2013	1,462.51	3,537.69	14,999.67	5.57%
2014	1,930.67	4,374.31	16,773.99	5.25%
2015	2,061.20	4,943.49	17,590.61	4.59%
2016	2,092.39	4,982.49	17,908.08	4.17%
2017	2,448.22	6,231.28	21,741.91	4.22%
2018	2,744.68	7,419.27	25,045.75	
Q1	2,732.58	7,250.93	25,122.58	4.37%
Q2	2,703.16	7,356.20	24,555.62	4.51%
Q3	2,850.99	7,877.47	25,613.63	4.48%
Q4	2,692.00	7,192.48	24,891.19	

Note: this source did not publish the S&P Composite prior to 1989 and the NASDAQ prior to 1991.

Sources: Council of Economic Advisers, Economic Indicators, various issues.

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ELECTRIC UTILITY RATE CASES WHERE RETURN ON EQUITY WAS DETERMINED IN 2017 - 2018 AND ROE AWARDS IN PRIOR CASES

			Cases Decided in 2017-2018		Prior Cases to Those in 2017-2018			
Date	Company	State	ROE	Equity Ratio	Date	ROE	Equity Ratio	ROE Change From Prior Case
1/18/17	MDU Resources Group	WY	9.45%	50.99%				
1/24/17	Consolidated Edison Co of NY	NY	9.00%	48.00%	6/17/15	9.00%	48.00%	0.00%
1/31/17	DTE Electric Co	MI	10.10%	37.49%	12/11/15	10.30%	38.03%	-0.20%
2/15/17	Delmarva Power & Light Co	MD	9.60%	49.10%				
2/22/17	Rockland Electric Co	NJ	9.60%	49.70%	7/23/14	9.75%	50.35%	-0.15%
2/24/17	Tucson Electric Power Co	AZ	9.75%	50.03%	6/11/13	10.00%	43.50%	-0.25%
2/27/17	VA Electric & Power Co	VA	9.40%	49.49%	6/30/16	9.60%	49.99%	-0.20%
2/28/17	Consumers Energy Co	MI	10.10%	40.75%	11/19/15	10.30%	41.50%	-0.20%
3/2/17	Otter Tail Power Co	MN	9.41%	52.50%				
3/20/17	Oklahoma Gas & Electric Co	OK	9.50%	53.31%	7/9/12	10.20%		-0.70%
4/4/17	Gulf Power Co	FL	10.25%		12/13/13	10.25%		0.00%
4/12/17	Liberty Utilities (Granite State Electric)	NH	9.40%	50.00%				
4/20/17	Unitil Energy Systems, Inc.	NH	9.50%	50.97%				
5/3/17	Kansas City Power & Light Co	MO	9.50%	49.20%	9/2/15	9.50%	50.09%	0.00%
5/11/17	Northern States Power Co - MN	MN	9.20%	52.50%	3/26/15	9.72%	52.50%	-0.52%
5/18/17	Oklahoma Gas & Electric Co	AR	9.50%	36.38%				
5/23/17	Delmarva Power & Light Co	DE	9.70%		4/2/14	9.70%	49.22%	0.00%
5/31/17	Idaho Power Co	ID	9.50%		2/23/12	9.90%	49.90%	-0.40%
6/16/17	MDU Resources Group, Inc.	ND	9.65%	51.40%	1/15/16	10.50%	50.27%	-0.85%
6/22/17	Kentucky Utilities Co	KY	9.70%		12/20/12	10.25%		-0.55%
6/22/17	Louisville Gas & Electric Co	KY	9.70%		12/20/12	10.25%		-0.55%
7/24/17	Potomac Electric Power Co	DC	9.50%	49.14%	3/26/14	9.40%	49.19%	0.10%
8/15/17	Arizona Public Service Co	AZ	10.00%	55.80%	5/15/12	10.00%	53.94%	0.00%
9/22/17	Atlantic City Electric Co	NJ	9.60%	50.47%	6/24/16	9.75%	49.48%	-0.15%
9/28/17	Oncor Electric Delivery Co	TX	9.60%	42.50%				
10/20/17	Potomac Electric Power Co	MD	9.50%	50.15%	11/15/16	9.55%	49.55%	-0.05%
10/26/17	San Diego Gas & Electric Co	CA	10.20%	52.00%	12/20/12	10.30%	52.00%	-0.10%
10/26/17	Southern California Edison Co	CA	10.30%	48.00%	12/20/12	10.45%	48.00%	-0.15%
10/26/17	Pacific Gas and Electric Co	CA	10.25%	52.00%	12/20/12	10.40%	52.00%	-0.15%
11/6/17	Tampa Electric Co	FL	10.25%		9/11/13	10.25%	42.00%	0.00%
11/15/17	Alaska Electric Light and Power Co	AK	11.95%	55.18%				
11/30/17	NSTAR Electric Co	MA	10.00%	53.34%				
11/30/17	Western Massachusetts Electric Co	MA	10.00%	54.51%				
12/5/17	Puget Sound Energy, Inc	WA	9.50%	46.50%	6/25/13	9.80%	48.00%	-0.30%
12/6/17	Ameren Illinois Co	IL	8.40%	50.00%	12/6/16	8.64%	50.00%	-0.24%
12/6/17	Commonwealth Edison Co	IL	8.40%	45.89%	12/6/16	8.64%	50.00%	-0.24%
12/7/17	Northern States Power Co - WI	WI	9.80%	51.45%	12/12/14	10.20%	52.54%	-0.40%
12/14/17	Southwestern Electric Power Co	TX	9.60%	48.46%	10/3/13	9.65%	49.10%	-0.05%
12/14/17	El Paso Electric Co	TX	9.65%	48.35%	6/8/16	9.48%	49.29%	0.17%
12/18/17	Portland General Electric Co	OR	9.50%	50.00%	12/15/15	9.60%	50.00%	-0.10%
12/20//17	Public Service Co of New Mexico	NM	9.58%	49.61%	9/28/16	9.58%	49.61%	0.00%
12/21/17	Green Mountain Power Co	VT	9.10%	48.60%	8/25/14	9.60%	50.00%	-0.50%
12/28/17	Avista Corp	ID	9.50%	50.00%	12/28/16	9.50%	50.00%	0.00%
12/29/17	Nevada Power Co	NV	9.40%	49.99%	10/9/14	9.50%	48.17%	-0.10%
1/18/18	Kentucky Power Co	KY	9.70%	41.68%				
1/31/18	Public Service Co of Oklahoma	OK	9.30%	48.51%	11/10/16	9.50%	44.00%	-0.20%
2/02/18	Interstate Power & Light Co	IA	9.98%	49.02%				
2/06/18	Mississippi Power Co	MS	8.58%	50.45%	12/3/15	9.23%	49.73%	-0.65%
2/21/18	Virginia Electric and Power Co	VA	9.20%	50.23%	2/27/17	9.60%	49.99%	-0.40%
2/23/18	Duke Energy Progress	NC	9.90%	52.00%	5/30/13	10.20%	53.00%	-0.30%
3/12/18	ALLETE (Minnesota Power)	MN	9.25%	53.81%				
3/15/18	Niagara Mohawk Power Corp	NY	9.00%	48.00%	3/14/13	9.30%	52.81%	-0.30%
3/29/18	Consumers Energy Co	MI	10.00%	40.89%	11/19/15	10.30%	41.50%	-0.30%
4/12/18	Indiana Michigan Power Co	MI	9.90%	36.38%	2/15/12	10.20%	42.07%	-0.30%
4/13/18	Duke Energy Kentucky, Inc.	KY	9.73%	49.25%				
4/18/18	Connecticut Light & Power Co	CT	9.25%	53.00%	12/17/14	9.17%	50.38%	0.08%
4/18/18	DTE Electric Co	MI	10.00%	36.84%	1/31/17	10.30%	38.03%	-0.30%
4/26/18	Avista Corp	WA	9.50%	48.50%	1/6/16	9.80%	47.00%	-0.30%
5/10/18	Virginia Electric and Power Co	VA	9.20%	50.23%	2/27/17	9.60%	49.99%	-0.40%
5/30/18	Indiana Michigan Power Co	IN	9.95%	35.73%	2/13/13	10.20%	42.67%	-0.25%
5/31/18	Potomac Electric Power Co	MD	9.50%	50.44%	10/20/17	9.55%	49.55%	-0.05%
6/14/18	Central & Hudson Gas & Electric Co	NY	8.80%	48.00%	6/15/15	9.00%	48.00%	-0.20%
6/22/18	Duke Energy Carolinas	NC	9.90%	52.00%	9/24/13	10.20%	53.00%	-0.30%
6/28/18	Emera Maine	ME	9.35%	49.00%	12/19/16	9.00%	49.00%	0.35%
6/29/18	Hawaii Electric Light Co	HI	9.50%	55.69%	4/4/12	10.00%	55.91%	-0.50%
8/8/18	Potomac Electric Power Co	DC	9.53%	50.44%	7/24/17	9.50%		0.03%
8/21/18	Delmarva Power & Light Co	DE	9.70%	50.52%	5/23/17	9.70%		0.00%
8/24/18	Narragansett Electric Co	RI	9.28%	50.95%	12/20/12	9.50%	50.00%	-0.22%
9/05/18	Southwestern Public Service Co	NM	9.10%	51.00%	3/26/14	9.96%	53.86%	-0.86%
9/14/18	Wisconsin Power & Light Co	WI	10.00%	52.00%	11/18/16	10.00%	52.20%	0.00%
9/20/18	Madison Gas & Electric Cp	WI	9.80%	56.06%	11/9/16	9.80%	57.16%	0.00%
9/26/18	Otter Tail Power Co	ND	9.77%	52.50%				
9/26/18	Dayton Power & Light Co	OH	10.00%	47.52%				
9/27/18	Westar Energy, Inc	KS	9.30%	51.24%				
10/4/18	UGI Utilities, Inc	PA	9.85%	54.02%				
10/29/18	Public Service Electric & Gas Co	NJ	9.60%	54.00%				
10/31/18	Indianapolis Power & Light Co	IN	9.99%	39.67%	3/16/16	9.85%	37.33%	0.14%
11/01/18	Ameren Illinois Co	IL	8.69%	50.00%	11/6/17	8.40%	50.00%	0.29%
12/4/18	Commonwealth Edison Co	IL	8.69%	47.11%	12/6/17	8.40%	45.89%	0.29%
12/13/18	Kansas City Power & Light Co	KS	9.30%	49.09%	9/10/15	9.30%	50.48%	0.00%
12/14/18	Portland General Electric Co	OR	9.50%	50.00%	12/18/17	9.50%	50.00%	0.00%
12/19/18	Duke Energy Ohio, Inc	OH	9.84%	50.75%	5/1/13	9.84%	53.30%	0.00%
12/20/18	Texas-New Mexico Power Co	TX	9.55%	45.00%				
12/21/18	Green Mountain Power Co	VT	9.30%	49.85%	12/21/17	9.10%	48.50%	0.20%
Average			9.59%	49.88%		9.78%	49.04%	-0.22%
Median			9.58%	50.00%		9.75%	49.73%	-0.20%

Number of Cases	64
Increase ROE	9
No Change	14
Decrease in ROE	41

Note: Highlighted values not included in average and median values

Source: Information contained in RRA Regulatory Focus, Major Rate Case Decisions, 2012-2018.

HISTORY OF CREDIT RATINGS
LONG-TERM DEBT

	Duke Energy Carolinas - Sen. Secured		Duke Energy Carolinas - Sen. Unsecured		Duke Energy Corp - Sen. Unsecured	
Year	Moody's	S&P	Moody's	S&P	Moody's	S&P
2013	Aa3	A	A2	BBB+	A3	BBB
2014	Aa2	A	A1	BBB+	A3	BBB
2015	Aa2	A	A1	A-	Baa1	BBB+
2016	Aa2	A	A1	A-	Baa1	BBB+
2017	Aa2	A	A1	A-	Baa1	BBB+
2018	Aa2	A	A1	A-	Baa1	BBB+
2019	Aa2	A	A1	A-	Baa1	BBB+

Source: Response to SC Office of Regulatory Staff Second Audit Information Request, Item No. 2-10, as updated in response to Item No. 22-2.

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DUKE ENERGY CAROLINAS, LLC
CAPITAL STRUCTURE RATIOS
2014 – 2018
($ MILLIONS)

Year	Common Equity	Long-Term Debt	Short-Term Debt
2014	$11,007	$7,885	$505
	56.7%	40.7%	2.6%
	58.3%	41.7%	
2015	$11,603	$8,051	$355
	58.0%	40.2%	1.8%
	59.0%	41.0%	
2016	$10,771	$9,533	$115
	52.7%	46.7%	0.6%
	53.0%	47.0%	
2017	$11,363	$8,950	$1,304
	52.6%	41.4%	6.0%
	55.9%	44.1%	
2018	$11,682	$10,993	$439
	50.5%	47.6%	1.9%
	51.5%	48.5%	

Source: Response to SC Office of Regulatory Staff Second Audit Information Request, Item No. 2-1, as updated in response to Item No. 30.

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DUKE ENERGY CORP
CAPITAL STRUCTURE RATIOS
2014 – 2018
($ MILLIONS)

Year	Common Equity	Long-Term Debt	Short-Term Debt
2014	$40,875	$37,061	$5,321
	49.1%	44.5%	6.4%
	52.4%	47.6%	
2015	$39,727	$37,495	$5,707
	47.9%	45.2%	6.9%
	51.4%	48.6%	
2016	$41,033	$45,576	$4,806
	44.9%	49.9%	5.3%
	47.4%	52.6%	
2017	$41,739	$49,035	$5,407
	43.4%	51.0%	5.6%
	46.0%	54.0%	
2018	$43,817	$51,123	$6,816
	43.1%	50.2%	6.7%
	46.2%	53.8%	

Source: Response to SC Office of Regulatory Staff Second Audit Information Request, Item No. 2-1, as updated in response to Item No. 30.

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PROXY COMPANIES
COMMON EQUITY RATIOS
EXCLUDING SHORT-TERM DEBT

Company	2014	2015	2016	2017	2018	Average	2021-2023
Parcell Proxy Group							
American Electric Power Co.	51.0%	50.2%	50.0%	48.5%	45.5%	49.0%	48.0%
Consolidated Edison Co.	52.0%	52.1%	49.2%	51.1%	48.5%	50.6%	49.5%
DTE Energy Co.	50.0%	49.8%	44.4%	43.8%	42.5%	46.1%	44.0%
Duke Energy Co.	52.3%	51.4%	47.4%	46.0%	46.0%	48.6%	43.5%
Eversource Energy	53.2%	53.6%	54.4%	48.2%	47.0%	51.3%	43.5%
NextEra Energy Inc.	45.0%	45.8%	46.7%	47.3%	56.0%	48.2%	54.0%
Public Service Enterprise Group	59.6%	59.7%	54.7%	53.4%	53.0%	56.1%	50.0%
WEC Energy Group	51.2%	48.6%	49.3%	51.9%	51.0%	50.4%	51.5%
Xcel Energy Inc.	47.0%	45.9%	43.7%	44.1%	43.0%	44.7%	43.0%
Mean						**49.4%**	**47.4%**
Median						**49.0%**	**48.0%**
Hevert Proxy Group							
ALLETE	55.8%	53.7%	58.0%	59.0%	59.0%	57.1%	59.5%
Alliant Energy	47.5%	51.4%	47.2%	51.0%	48.0%	49.0%	48.0%
Ameren Corp.	51.7%	49.7%	51.3%	49.8%	49.0%	50.3%	49.5%
American Electric Power	51.0%	50.2%	50.0%	48.5%	45.5%	49.0%	48.0%
AVANGRID, Inc.	83.2%	76.9%	77.0%	74.4%	71.5%	76.6%	61.5%
Black Hills Corp.	52.1%	44.0%	33.5%	35.5%	42.0%	41.4%	50.5%
CMS Energy Corp.	31.0%	31.4%	32.6%	32.4%	35.5%	32.6%	38.0%
DTE Energy Co.	50.0%	49.8%	44.4%	43.8%	42.5%	46.1%	44.0%
El Paso Electric	46.5%	47.3%	47.3%	48.8%	46.0%	47.2%	44.5%
Hawaiian Electric Industries	53.8%	55.5%	57.5%	55.7%	54.5%	55.4%	55.0%
NextEra Energy, Inc.	45.0%	45.8%	46.7%	47.3%	56.0%	48.2%	54.0%
NorthWestern Corp.	46.6%	46.9%	48.0%	49.8%	50.5%	48.4%	53.5%
OGE Energy	54.1%	55.7%	58.9%	58.3%	56.0%	56.6%	53.0%
Otter Tail Corp.	53.5%	57.6%	57.0%	58.7%	55.0%	56.4%	60.5%
Pinnacle West Capital	59.0%	57.0%	54.4%	51.1%	52.0%	54.7%	54.5%
PNM Resources	51.9%	45.5%	44.0%	43.6%	40.0%	45.0%	42.0%
Portland General Electric	47.3%	52.2%	51.6%	49.9%	53.0%	50.8%	52.0%
Southern Company	47.3%	44.0%	35.7%	35.0%	36.5%	39.7%	40.0%
WEC Energy Group	51.2%	48.6%	49.3%	51.9%	51.0%	50.4%	51.5%
Xcel Energy Inc.	47.0%	45.9%	43.7%	44.1%	43.0%	44.7%	43.0%
Mean						**50.0%**	**50.1%**
Median						**49.0%**	**51.0%**

Source: Value Line Investment Survey.

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PROXY COMPANIES
CRITERIA FOR SELECTION

Company	Market Capitalization ($000)	Common Equity Ratio	Value Line Safety	Moody's Bond Rating /1	S&P Bond Rating 1/
Duke Energy Co.	$63,000,000	46.0%	2	Baa1	A-
Duke Energy Carolinas				**A1**	**A-**
Parcell Proxy Group	**($20 billion Plus)**	**(over 40%)**	**(1 or 2)**	**(A or Baa)**	**(A or BBB)**
American Electric Power Co.	$39,000,000	45.5%	1	Baa1	A-
Consolidated Edison Co.	$24,000,000	48.5%	1	Baa1	A-
DTE Energy Co.	$22,000,000	42.5%	2	Baa1	BBB+
Eversource Energy	$22,000,000	47.0%	1	Baa1	A+
NextEra Energy Inc.	$85,000,000	56.0%	1	Baa1	A-
Public Service Enterprise Group	$28,000,000	53.0%	1	Baa1	BBB+
WEC Energy Group	$23,000,000	51.0%	1	Baa1	A-
Xcel Energy Inc.	$26,000,000	43.0%	1	A3	A-
Hevert Proxy Group					
ALLETE	$4,100,000	59.0%	2	A3	BBB+
Alliant Energy	$10,900,000	48.0%	2	Baa1	A-
Ameren Corp.	$17,000,000	49.0%	2	Baa1	BBB+
American Electric Power	$39,000,000	45.5%	1	Baa1	A-
AVANGRID, Inc.	$15,000,000	71.5%	2	Baa1	BBB+
Black Hills Corp.	$3,800,000	42.0%	2	Baa2	BBB+
CMS Energy Corp.	$15,000,000	35.5%	2	Baa1	BBB+
DTE Energy Co.	$22,000,000	42.5%	2	Baa1	BBB+
El Paso Electric	$2,000,000	46.0%	2	Baa1	BBB
Hawaiian Electric Industries	$3,900,000	54.5%	2		BBB-
NextEra Energy, Inc.	$85,000,000	56.0%	1	Baa1	A-
NorthWestern Corp.	$3,100,000	50.5%	2	A3	BBB
OGE Energy	$8,000,000	56.0%	2	Baa1	BBB+
Otter Tail Corp.	$1,900,000	55.0%	2	Baa2	BBB
Pinnacle West Capital	$9,400,000	52.0%	1	A3	A-
PNM Resources	$3,300,000	40.0%	3	Baa3	BBB+
Portland General Electric	$4,000,000	53.0%	2	A3	BBB+
Southern Company	$50,000,000	36.5%	2	Baa2	A-
WEC Energy Group	$23,000,000	51.0%	1	Baa1	A-
Xcel Energy Inc.	$26,000,000	43.0%	1	A3	A-

1/ Bond ratings are for Issuer Rating (Moody's) and Issuer Credit (Standard & Poor's) for companies that have these ratings, and highest other ratings for companies that do not have these ratings.

Sources: Value Line, S&P, Moody's.

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PROXY COMPANIES
DIVIDEND YIELD CALCULATIONS

Company	Quarterly DPS	Annual DPS	Stock Price (November 2018 - January 2019) High	Low	Average	Yield
Parcell Proxy Group						
American Electric Power Co.	$0.670	$2.68	$81.05	$72.07	$76.56	3.50%
Consolidated Edison Co.	$0.715	$2.86	$84.32	$73.30	$78.81	3.63%
DTE Energy Co.	$0.945	$3.78	$121.00	$107.22	$114.11	3.31%
Duke Energy Co.	$0.928	$3.71	$91.35	$80.89	$86.12	4.31%
Eversource Energy	$0.505	$2.02	$70.53	$61.57	$66.05	3.06%
NextEra Energy Inc.	$1.110	$4.44	$184.20	$164.78	$174.49	2.54%
Public Service Enterprise Group	$0.450	$1.80	$56.33	$49.23	$52.78	3.41%
WEC Energy Group	$0.553	$2.21	$75.48	$66.46	$70.97	3.12%
Xcel Energy Inc.	$0.380	$1.52	$54.11	$47.44	$50.78	2.99%
Mean						**3.32%**
Hevert Proxy Group						
ALLETE	$0.560	$2.24	$82.82	$72.42	$77.62	2.89%
Alliant Energy	$0.355	$1.42	$46.58	$40.68	$43.63	3.25%
Ameren Corp.	$0.475	$1.90	$70.95	$62.51	$66.73	2.85%
American Electric Power	$0.670	$2.68	$81.05	$72.07	$76.56	3.50%
AVANGRID, Inc.	$0.440	$1.76	$53.47	$46.92	$50.20	3.51%
Black Hills Corp.	$0.505	$2.02	$68.23	$59.33	$63.78	3.17%
CMS Energy Corp.	$0.383	$1.53	$53.82	$47.63	$50.73	3.02%
DTE Energy Co.	$0.945	$3.78	$121.00	$107.22	$114.11	3.31%
El Paso Electric	$0.360	$1.44	$59.27	$47.99	$53.63	2.69%
Hawaiian Electric Industries	$0.310	$1.24	$39.35	$35.15	$37.25	3.33%
NextEra Energy, Inc.	$1.110	$4.44	$184.20	$164.78	$174.49	2.54%
NorthWestern Corp.	$0.550	$2.20	$65.74	$57.28	$61.51	3.58%
OGE Energy	$0.365	$1.46	$41.80	$35.55	$38.68	3.78%
Otter Tail Corp.	$0.335	$1.34	$51.88	$44.22	$48.05	2.79%
Pinnacle West Capital	$0.738	$2.95	$92.64	$81.51	$87.08	3.39%
PNM Resources	$0.290	$1.16	$45.35	$37.67	$41.51	2.79%
Portland General Electric	$0.363	$1.45	$50.40	$43.73	$47.07	3.09%
Southern Company	$0.600	$2.40	$48.17	$42.50	$45.34	5.29%
WEC Energy Group	$0.553	$2.21	$75.48	$66.46	$70.97	3.12%
Xcel Energy Inc.	$0.380	$1.52	$54.11	$47.44	$50.78	2.99%
Mean						**3.24%**

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PROXY COMPANIES
RETENTION GROWTH RATES

Company	2014	2015	2016	2017	2018	2014-2018 Average	2019	2021-23	2019 - 2021-23 Average
Parcell Proxy Group									
American Electric Power Co.	3.8%	3.9%	5.5%	3.2%	3.5%	4.0%	3.5%	4.0%	3.8%
Consolidated Edison Co.	2.6%	3.5%	3.0%	3.0%	3.5%	3.1%	2.0%	2.5%	2.3%
DTE Energy Co.	5.2%	3.4%	3.7%	4.6%	4.5%	4.3%	4.0%	4.5%	4.3%
Duke Energy Co.	1.7%	1.5%	0.6%	1.2%	1.5%	1.3%	2.0%	2.0%	2.0%
Eversource Energy	3.5%	3.4%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
NextEra Energy Inc.	6.0%	6.1%	4.4%	4.4%	3.0%	4.8%	4.5%	5.0%	4.8%
Public Service Enterprise Group	6.3%	6.8%	4.6%	4.1%	4.5%	5.3%	4.5%	5.0%	4.8%
WEC Energy Group	5.3%	2.1%	3.5%	3.6%	3.5%	3.6%	3.5%	4.0%	3.8%
Xcel Energy Inc.	4.5%	4.3%	4.0%	3.9%	4.0%	4.1%	4.0%	4.0%	4.0%
Mean						**3.8%**			**3.7%**
Hevert Proxy Group									
ALLETE	2.5%	3.6%	2.8%	2.4%	2.5%	2.8%	3.0%	3.0%	3.0%
Alliant Energy	4.3%	3.6%	2.8%	4.0%	4.0%	3.7%	4.0%	4.0%	4.0%
Ameren Corp.	2.9%	2.5%	3.3%	3.4%	5.0%	3.4%	4.5%	4.5%	4.5%
American Electric Power	3.8%	3.9%	5.5%	3.2%	3.5%	4.0%	3.5%	4.0%	3.8%
AVANGRID, Inc.	3.4%	1.8%	1.4%	0.0%	1.0%	1.5%	1.5%	2.0%	1.8%
Black Hills Corp.	4.3%	3.8%	3.3%	5.3%	4.0%	4.1%	4.0%	4.0%	4.0%
CMS Energy Corp.	5.0%	5.2%	4.8%	5.2%	5.5%	5.1%	5.5%	5.5%	5.5%
DTE Energy Co.	5.2%	3.4%	3.7%	4.6%	4.5%	4.3%	4.0%	4.5%	4.3%
El Paso Electric	4.8%	3.4%	4.4%	3.9%	3.0%	3.9%	3.0%	3.0%	3.0%
Hawaiian Electric Industries	2.3%	1.5%	6.3%	2.1%	3.5%	3.1%	4.0%	3.5%	3.8%
NextEra Energy, Inc.	6.0%	6.1%	4.4%	4.4%	3.0%	4.8%	4.5%	5.0%	4.8%
NorthWestern Corp.	3.8%	3.0%	4.1%	3.4%	3.0%	3.5%	3.0%	3.0%	3.0%
OGE Energy	6.5%	4.0%	3.3%	3.5%	3.5%	4.2%	3.0%	3.5%	3.3%
Otter Tail Corp.	2.2%	2.0%	2.1%	3.2%	4.0%	2.7%	4.5%	5.0%	4.8%
Pinnacle West Capital	3.5%	3.9%	3.5%	4.2%	3.5%	3.7%	4.0%	4.0%	4.0%
PNM Resources	3.2%	3.3%	2.8%	4.5%	4.0%	3.6%	4.5%	4.5%	4.5%
Portland General Electric	4.6%	3.3%	3.5%	3.6%	3.5%	3.7%	3.5%	3.0%	3.3%
Southern Company	3.2%	3.1%	2.5%	3.9%	2.0%	2.9%	2.5%	3.5%	3.0%
WEC Energy Group	5.3%	2.1%	3.5%	3.6%	3.5%	3.6%	3.5%	4.0%	3.8%
Xcel Energy Inc.	4.5%	4.3%	4.0%	3.9%	4.0%	4.1%	4.0%	4.0%	4.0%
Mean						**3.6%**			**3.8%**

Figures reported by Value Line as "Retained to Com Eq."

Source: Value Line Investment Survey.

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PROXY COMPANIES
PER SHARE GROWTH RATES

Company	Five-Year Historic Growth Rates				Est'd -15-'17 to '21-'23 Growth Rates			
	EPS	DPS	BVPS	Average	EPS	DPS	BVPS	Average
Parcell Proxy Group								
American Electric Power Co.	5.5%	4.5%	4.0%	4.7%	4.5%	6.0%	4.0%	4.8%
Consolidated Edison Co.	2.0%	2.0%	3.5%	2.5%	3.0%	3.5%	3.5%	3.3%
DTE Energy Co.	6.0%	6.0%	4.0%	5.3%	7.5%	6.5%	5.5%	6.5%
Duke Energy Co.	0.5%	2.5%	2.0%	1.7%	5.5%	4.0%	2.0%	3.8%
Eversource Energy	7.5%	9.0%	6.5%	7.7%	5.5%	6.0%	4.0%	5.2%
NextEra Energy Inc.	5.5%	9.5%	8.5%	7.8%	9.0%	10.5%	7.0%	8.8%
Public Service Enterprise Group	1.0%	3.5%	5.5%	3.3%	4.5%	5.0%	4.5%	4.7%
WEC Energy Group	5.5%	14.0%	10.5%	10.0%	7.0%	6.0%	3.5%	5.5%
Xcel Energy Inc.	5.0%	5.5%	4.5%	5.0%	5.5%	5.5%	4.5%	5.2%
Mean				**5.3%**				**5.3%**
Hevert Proxy Group								
ALLETE	5.5%	3.0%	6.0%	4.8%	3.5%	4.5%	3.5%	3.8%
Alliant Energy	6.5%	6.5%	4.5%	5.8%	6.5%	6.0%	5.0%	5.8%
Ameren Corp.	0.5%	2.0%	-1.0%	0.5%	7.5%	5.5%	4.5%	5.8%
American Electric Power	5.5%	4.5%	4.0%	4.7%	4.5%	6.0%	4.0%	4.8%
AVANGRID, Inc.					12.0%	5.5%	1.5%	6.3%
Black Hills Corp.	14.0%	3.0%	1.5%	6.2%	6.5%	6.0%	6.0%	6.2%
CMS Energy Corp.	7.0%	8.5%	5.0%	6.8%	7.0%	7.0%	7.0%	7.0%
DTE Energy Co.	6.0%	6.0%	4.0%	5.3%	7.5%	6.5%	5.5%	6.5%
El Paso Electric		18.0%	6.5%	12.3%	3.0%	7.0%	3.5%	4.5%
Hawaiian Electric Industries	4.5%	0.0%	3.5%	2.7%	3.5%	2.0%	4.0%	3.2%
NextEra Energy, Inc.	5.5%	9.5%	8.5%	7.8%	9.0%	10.5%	7.0%	8.8%
NorthWestern Corp.	7.0%	7.0%	8.0%	7.3%	2.5%	4.5%	3.5%	3.5%
OGE Energy	1.0%	8.5%	6.5%	5.3%	6.0%	8.0%	4.0%	6.0%
Otter Tail Corp.	21.5%	1.0%	1.0%	7.8%	9.0%	3.5%	7.5%	6.7%
Pinnacle West Capital	5.0%	2.5%	4.0%	3.8%	6.0%	6.0%	4.0%	5.3%
PNM Resources	8.5%	11.5%	2.0%	7.3%	7.5%	7.0%	4.0%	6.2%
Portland General Electric	3.5%	3.5%	3.5%	3.5%	4.0%	6.0%	3.5%	4.5%
Southern Company	3.0%	3.5%	3.5%	3.3%	3.5%	3.0%	3.0%	3.2%
WEC Energy Group	5.5%	14.0%	10.5%	10.0%	7.0%	6.0%	3.5%	5.5%
Xcel Energy Inc.	5.0%	5.5%	4.5%	5.0%	5.5%	5.5%	4.5%	5.2%
Mean				**5.8%**				**5.4%**

Source: Value Line Investment Survey.

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PROXY COMPANIES
DCF COST RATES

Company	Adjusted Yield	Historic Retention Growth	Prospective Retention Growth	Historic Per Share Growth	Prospective Per Share Growth	First Call EPS Growth	Average Growth	DCF Rates
Parcell Proxy Group								
American Electric Power Co.	3.6%	4.0%	3.8%	4.7%	4.8%	5.74%	4.6%	8.2%
Consolidated Edison Co.	3.7%	3.1%	2.3%	2.5%	3.3%	2.87%	2.8%	6.5%
DTE Energy Co.	3.4%	4.3%	4.3%	5.3%	6.5%	5.49%	5.2%	8.6%
Duke Energy Co.	4.4%	1.3%	2.0%	1.7%	3.8%	4.41%	2.6%	7.0%
Eversource Energy	3.1%	3.5%	3.5%	7.7%	5.2%	5.83%	5.1%	8.3%
NextEra Energy Inc.	2.6%	4.8%	4.8%	7.8%	8.8%	8.47%	6.9%	9.6%
Public Service Enterprise Group	3.5%	5.3%	4.8%	3.3%	4.7%	7.21%	5.0%	8.5%
WEC Energy Group	3.2%	3.6%	3.8%	10.0%	5.5%	4.70%	5.5%	8.7%
Xcel Energy Inc.	3.1%	4.1%	4.0%	5.0%	5.2%	6.64%	5.0%	8.1%
Mean	3.4%	3.8%	3.7%	5.3%	5.3%	5.7%	4.8%	**8.2%**
Median	3.4%	4.0%	3.8%	5.0%	5.2%	5.7%	5.0%	**8.3%**
Composite - Mean		7.2%	**7.1%**	8.7%	8.7%	**9.1%**	8.2%	
Composite - Median		7.4%	**7.1%**	8.4%	8.6%	**9.1%**	8.4%	
Hevert Proxy Group								
ALLETE	2.9%	2.8%	3.0%	4.8%	3.8%	6.00%	4.1%	7.0%
Alliant Energy	3.3%	3.7%	4.0%	5.8%	5.8%	7.25%	5.3%	8.7%
Ameren Corp.	2.9%	3.4%	4.5%	0.5%	5.8%	7.70%	4.4%	7.3%
American Electric Power	3.6%	4.0%	3.8%	4.7%	4.8%	5.74%	4.6%	8.2%
AVANGRID, Inc.	3.6%	1.5%	1.8%		6.3%	9.20%	4.7%	8.3%
Black Hills Corp.	3.2%	4.1%	4.0%	6.2%	6.2%	4.46%	5.0%	8.2%
CMS Energy Corp.	3.1%	5.1%	5.5%	6.8%	7.0%	7.09%	6.3%	9.4%
DTE Energy Co.	3.4%	4.3%	4.3%	5.3%	6.5%	5.49%	5.2%	8.6%
El Paso Electric	2.8%	3.9%	3.0%	12.3%	4.5%	5.10%	5.8%	8.5%
Hawaiian Electric Industries	3.4%	3.1%	3.8%	2.7%	3.2%	7.80%	4.1%	7.5%
NextEra Energy, Inc.	2.6%	4.8%	4.8%	7.8%	8.8%	8.47%	6.9%	9.6%
NorthWestern Corp.	3.6%	3.5%	3.0%	7.3%	3.5%	2.59%	4.0%	7.6%
OGE Energy	3.9%	4.2%	3.3%	5.3%	6.0%	neg	4.7%	8.5%
Otter Tail Corp.	2.9%	2.7%	4.8%	7.8%	6.7%	9.00%	6.2%	9.1%
Pinnacle West Capital	3.5%	3.7%	4.0%	3.8%	5.3%	4.16%	4.2%	7.7%
PNM Resources	2.9%	3.6%	4.5%	7.3%	6.2%	4.10%	5.1%	8.0%
Portland General Electric	3.1%	3.7%	3.3%	3.5%	4.5%	5.05%	4.0%	7.1%
Southern Company	5.4%	2.9%	3.0%	3.3%	3.2%	1.68%	2.8%	8.2%
WEC Energy Group	3.2%	3.6%	3.8%	10.0%	5.5%	4.70%	5.5%	8.7%
Xcel Energy Inc.	3.1%	4.1%	4.0%	5.0%	5.2%	6.64%	5.0%	8.1%
Mean	3.3%	3.6%	3.8%	5.8%	5.4%	5.9%	4.9%	**8.2%**
Median	3.2%	3.7%	3.9%	5.3%	5.7%	5.7%	4.8%	**8.2%**
Composite - Mean		**7.0%**	7.1%	9.1%	8.8%	**9.2%**	8.2%	
Composite - Median		**6.9%**	7.1%	8.6%	8.9%	**9.0%**	8.1%	

Sources: previous pages of this schedule.

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STANDARD & POOR'S 500 COMPOSITE
20-YEAR U.S. TREASURY BOND YIELDS
RISK PREMIUMS

Year	EPS	BVPS	ROE	20-Year T-Bond Yield	Risk Premium
1977		$79.07			
1978	$12.33	$85.35	15.00%	7.90%	7.10%
1979	$14.86	$94.27	16.55%	8.86%	7.69%
1980	$14.82	$102.48	15.06%	9.97%	5.09%
1981	$15.36	$109.43	14.50%	11.55%	2.95%
1982	$12.64	$112.46	11.39%	13.50%	-2.11%
1983	$14.03	$116.93	12.23%	10.38%	1.85%
1984	$16.64	$122.47	13.90%	11.74%	2.16%
1985	$14.61	$125.20	11.80%	11.25%	0.55%
1986	$14.48	$126.82	11.49%	8.98%	2.51%
1987	$17.50	$134.07	13.42%	7.92%	5.50%
1988	$23.75	$141.32	17.25%	8.97%	8.28%
1989	$22.87	$147.26	15.85%	8.81%	7.04%
1990	$21.73	$153.01	14.47%	8.19%	6.28%
1991	$16.29	$158.85	10.45%	8.22%	2.23%
1992	$18.86	$149.74	12.22%	7.26%	4.96%
1993	$21.89	$180.88	13.24%	7.17%	6.07%
1994	$30.60	$193.06	16.37%	6.59%	9.78%
1995	$33.96	$216.51	16.58%	7.60%	8.98%
1996	$38.73	$237.08	17.08%	6.18%	10.90%
1997	$39.72	$249.52	16.33%	6.64%	9.69%
1998	$37.71	$266.40	14.62%	5.83%	8.79%
1999	$48.17	$290.68	17.29%	5.57%	11.72%
2000	$50.00	$325.80	16.22%	6.50%	9.72%
2001	$24.70	$338.37	7.44%	5.53%	1.91%
2002	$27.59	$321.72	8.36%	5.59%	2.77%
2003	$48.73	$367.17	14.15%	4.80%	9.35%
2004	$58.55	$414.75	14.98%	5.02%	9.96%
2005	$69.93	$453.06	16.12%	4.69%	11.43%
2006	$81.51	$504.39	17.03%	4.68%	12.35%
2007	$66.17	$529.59	12.80%	4.86%	7.94%
2008	$14.88	$451.37	3.03%	4.45%	-1.42%
2009	$50.97	$513.58	10.56%	3.47%	7.09%
2010	$77.35	$579.14	14.16%	4.25%	9.91%
2011	$86.95	$613.14	14.59%	3.82%	10.77%
2012	$86.51	$666.97	13.52%	2.46%	11.06%
2013	$100.20	$715.84	14.49%	2.88%	11.61%
2014	$102.31	$726.96	14.18%	3.41%	10.77%
2015	$88.43	$740.29	12.05%	2.47%	9.58%
2016	$95.48	$768.98	12.65%	2.30%	10.35%
2017	$110.98	$826.52	13.91%	2.67%	11.24%
Mean					7.11%

ROE = EPS divided by average of year-begin and year-end BVPS.

20-Year T-Bond Yield = income return on long-term U.S. Government Bonds.

Sources: Standard & Poor's, Duff & Phelps.

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PROXY COMPANIES
CAPM COST RATES

Company	Risk-Free Rate	Beta	Risk Premium	CAPM Rates
Parcell Proxy Group				
American Electric Power Co.	3.05%	0.55	6.0%	6.3%
Consolidated Edison Co.	3.05%	0.45	6.0%	5.7%
DTE Energy Co.	3.05%	0.55	6.0%	6.3%
Duke Energy Co.	3.05%	0.50	6.0%	6.0%
Eversource Energy	3.05%	0.60	6.0%	6.6%
NextEra Energy Inc.	3.05%	0.60	6.0%	6.6%
Public Service Enterprise Group	3.05%	0.65	6.0%	6.9%
WEC Energy Group	3.05%	0.50	6.0%	6.0%
Xcel Energy Inc.	3.05%	0.50	6.0%	6.0%
Mean				**6.3%**
Median				**6.3%**
Hevert Proxy Group				
ALLETE	3.05%	0.65	6.0%	6.9%
Alliant Energy	3.05%	0.60	6.0%	6.6%
Ameren Corp.	3.05%	0.55	6.0%	6.3%
American Electric Power	3.05%	0.55	6.0%	6.3%
AVANGRID, Inc.	3.05%	0.40	6.0%	5.4%
Black Hills Corp.	3.05%	0.75	6.0%	7.5%
CMS Energy Corp.	3.05%	0.55	6.0%	6.3%
DTE Energy Co.	3.05%	0.55	6.0%	6.3%
El Paso Electric	3.05%	0.65	6.0%	6.9%
Hawaiian Electric Industries	3.05%	0.60	6.0%	6.6%
NextEra Energy, Inc.	3.05%	0.60	6.0%	6.6%
NorthWestern Corp.	3.05%	0.55	6.0%	6.3%
OGE Energy	3.05%	0.85	6.0%	8.1%
Otter Tail Corp.	3.05%	0.75	6.0%	7.5%
Pinnacle West Capital	3.05%	0.55	6.0%	6.3%
PNM Resources	3.05%	0.65	6.0%	6.9%
Portland General Electric	3.05%	0.60	6.0%	6.6%
Southern Company	3.05%	0.50	6.0%	6.0%
WEC Energy Group	3.05%	0.50	6.0%	6.0%
Xcel Energy Inc.	3.05%	0.50	6.0%	6.0%
Mean				**6.6%**
Median				**6.5%**

Sources: Value Line Investment Survey, Standard & Poor's, Federal Reserve.

Yields on 20-Year U.S. Treasury Bonds

Month	Rate
Nov 2018	3.27%
Dec 2018	2.98%
Jan 2019	2.89%
Average	3.05%

PROXY COMPANIES
RATES OF RETURN ON AVERAGE COMMON EQUITY

Company	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2002-08 Average	2009-18 Average	2019	2021-23
Parcell Proxy Group																					
American Electric Power Co.	12.3%	12.4%	12.7%	11.9%	12.2%	11.7%	11.6%	11.0%	9.3%	10.7%	9.7%	9.9%	9.9%	10.1%	11.8%	10.0%	10.3%	12.1%	10.3%	10.0%	11.0%
Consolidated Edison Co.	11.5%	10.0%	8.0%	10.2%	9.7%	10.9%	9.9%	8.7%	9.3%	9.3%	9.7%	9.5%	8.5%	9.3%	8.6%	8.5%	8.3%	10.0%	9.0%	7.5%	8.5%
DTE Energy Co.	13.7%	9.7%	8.1%	10.2%	7.5%	7.7%	7.5%	8.7%	9.6%	9.1%	9.2%	8.6%	11.1%	9.3%	9.7%	11.1%	11.3%	9.2%	9.8%	10.0%	11.0%
Duke Energy Co.	8.9%	0.6%	8.6%	9.5%	4.8%	6.4%	6.1%	6.8%	8.0%	8.1%	6.8%	6.8%	7.1%	7.1%	6.4%	7.1%	7.3%	6.4%	7.2%	8.0%	8.5%
Eversource Energy	6.4%	7.1%	5.1%	5.4%	4.5%	8.6%	9.8%	9.6%	4.9%	10.0%	7.3%	8.3%	8.3%	8.6%	8.9%	9.0%	9.1%	6.7%	8.4%	9.0%	9.5%
NextEra Energy Inc.	11.6%	13.5%	12.6%	11.1%	14.0%	12.9%	14.8%	13.3%	14.4%	13.7%	12.4%	12.2%	13.0%	12.9%	11.4%	11.6%	11.7%	12.9%	12.7%	12.0%	13.5%
Public Service Enterprise Group	19.9%	18.3%	12.8%	14.9%	12.2%	19.2%	19.5%	18.8%	16.9%	15.8%	11.7%	11.1%	12.7%	13.2%	10.9%	10.6%	10.7%	16.7%	13.2%	11.0%	11.5%
WEC Energy Group	12.8%	11.8%	9.0%	11.6%	11.1%	11.1%	11.0%	10.8%	12.2%	13.0%	13.3%	13.6%	13.5%	10.0%	10.6%	10.8%	11.0%	11.2%	11.9%	11.0%	12.0%
Xcel Energy Inc.	2.8%	10.0%	9.8%	9.1%	9.8%	9.3%	9.7%	9.5%	9.5%	10.1%	10.4%	10.2%	10.3%	10.2%	10.4%	10.4%	10.6%	8.6%	10.2%	10.5%	10.5%
Mean	11.1%	10.4%	9.6%	10.4%	9.5%	10.9%	11.1%	10.8%	10.5%	11.1%	10.1%	10.0%	10.5%	10.1%	9.9%	9.9%	10.0%	**10.4%**	**10.3%**	**9.9%**	**10.7%**
Median	11.6%	10.0%	9.0%	10.2%	9.8%	10.9%	9.9%	9.6%	9.5%	10.1%	9.7%	9.9%	10.3%	10.0%	10.4%	10.4%	10.6%	**10.2%**	**10.1%**	**10.0%**	**11.0%**
Hevert Proxy Group																					
ALLETE				12.0%	13.2%	13.4%	11.4%	7.3%	8.2%	9.5%	8.7%	8.4%	8.6%	9.4%	8.3%	8.0%	8.2%		8.5%	8.0%	9.0%
Alliant Energy	5.7%	9.1%	8.5%	10.3%	9.4%	11.5%	10.2%	7.5%	10.8%	10.4%	11.1%	11.4%	11.5%	10.6%	9.9%	11.4%	11.2%	9.2%	10.6%	10.5%	10.5%
Ameren Corp.	10.8%	12.2%	10.0%	10.3%	8.5%	9.3%	8.8%	8.4%	8.5%	7.6%	8.0%	7.7%	8.8%	8.5%	9.3%	9.4%	11.0%	10.0%	8.7%	10.0%	10.5%
American Electric Power	12.3%	12.4%	12.7%	11.9%	12.2%	11.7%	11.6%	11.0%	9.3%	10.7%	9.7%	9.9%	9.9%	10.1%	11.8%	10.0%	10.3%	12.1%	10.3%	10.0%	11.0%
AVANGRID, Inc.															4.1%	3.4%	4.5%			5.0%	6.5%
Black Hills Corp.	12.1%	8.9%	7.9%	9.4%	9.6%	10.9%	0.7%	8.4%	5.9%	3.6%	7.1%	9.1%	9.6%	9.5%	8.9%	10.9%	10.1%	8.5%	8.3%	9.5%	10.0%
CMS Energy Corp.	neg	neg	7.2%	10.4%	6.2%	6.6%	12.1%	8.3%	11.8%	12.5%	12.7%	13.2%	13.2%	13.7%	13.5%	14.0%	14.4%	8.5%	12.7%	14.0%	14.0%
DTE Energy Co.	13.7%	9.7%	8.1%	10.2%	7.5%	7.7%	7.5%	8.7%	9.6%	9.1%	9.2%	8.6%	11.1%	9.3%	9.7%	11.1%	11.3%	9.2%	9.8%	10.0%	11.0%
El Paso Electric	6.3%	6.5%	6.3%	6.7%	10.5%	11.9%	11.4%	9.4%	11.7%	13.0%	11.4%	10.0%	9.5%	8.2%	9.3%	8.9%	8.0%	8.5%	9.9%	8.5%	8.5%
Hawaiian Electric Industries	11.9%	11.1%	9.3%	9.7%	9.3%	7.7%	7.0%	5.9%	7.7%	9.1%	10.4%	9.7%	9.5%	8.5%	12.4%	8.6%	9.7%	9.4%	9.2%	9.5%	9.5%
NextEra Energy, Inc.	11.6%	13.5%	12.6%	11.1%	14.0%	12.9%	14.8%	13.3%	14.4%	13.7%	12.4%	12.2%	13.0%	12.9%	11.4%	11.6%	11.7%	12.9%	12.7%	12.0%	13.5%
NorthWestern Corp.					6.4%	6.9%	8.4%	9.4%	9.6%	10.9%	9.3%	9.5%	10.3%	9.0%	10.0%	9.4%	9.1%		9.7%	9.0%	9.0%
OGE Energy	11.1%	13.2%	12.7%	12.5%	15.0%	14.7%	13.0%	12.9%	13.5%	14.0%	13.2%	13.2%	12.5%	10.3%	10.0%	10.5%	10.7%	13.2%	12.1%	10.5%	11.5%
Otter Tail Corp.	15.2%	12.0%	10.8%	11.6%	10.4%	10.4%	5.9%	3.7%	2.1%	2.7%	6.9%	9.4%	10.3%	9.9%	9.7%	10.7%	11.8%	10.9%	7.7%	11.5%	11.0%
Pinnacle West Capital	8.6%	8.3%	8.2%	6.7%	9.2%	8.5%	6.1%	6.8%	9.3%	8.7%	9.8%	9.9%	9.2%	9.7%	9.4%	10.1%	9.7%	7.9%	9.3%	10.0%	10.5%
PNM Resources	6.3%	6.7%	7.9%	8.6%	8.4%	3.4%	0.5%	3.1%	4.8%	5.8%	6.6%	6.9%	6.7%	6.9%	7.0%	9.1%	9.1%	6.0%	6.6%	9.5%	9.5%
Portland General Electric					5.9%	11.5%	6.5%	6.2%	8.0%	9.0%	8.3%	7.7%	9.1%	8.2%	8.3%	8.6%	8.7%		8.2%	8.5%	9.0%
Southern Company	15.7%	15.6%	15.2%	15.0%	14.2%	14.5%	13.5%	13.2%	12.6%	12.9%	12.9%	12.7%	12.8%	12.7%	11.9%	13.1%	12.0%	14.8%	12.7%	12.0%	13.0%
WEC Energy Group	12.8%	11.8%	9.0%	11.6%	11.1%	11.1%	11.0%	10.8%	12.2%	13.0%	13.3%	13.6%	13.5%	10.0%	10.6%	10.8%	11.0%	11.2%	11.9%	11.0%	12.0%
Xcel Energy Inc.	2.8%	10.0%	9.8%	9.1%	9.8%	9.3%	9.7%	9.5%	9.5%	10.1%	10.4%	10.2%	10.3%	10.2%	10.4%	10.4%	10.6%	8.6%	10.2%	10.5%	10.5%
Mean	10.5%	10.7%	9.8%	10.4%	10.0%	10.2%	9.0%	8.6%	9.4%	9.8%	10.1%	10.2%	10.5%	9.9%	9.8%	10.0%	10.2%	**10.1%**	**9.9%**	**10.0%**	**10.5%**
Median	11.6%	11.1%	9.2%	10.3%	9.6%	10.9%	9.7%	8.4%	9.5%	10.1%	9.8%	9.9%	10.3%	9.7%	9.8%	10.3%	10.5%	**10.3%**	**9.8%**	**10.0%**	**10.5%**

Source: Calculations made from data contained in Value Line Investment Survey.

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PROXY COMPANIES
MARKET-TO-BOOK RATIOS

Company	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2002-08 Average	2009-18 Average
Parcell Proxy Group																			
American Electric Power Co.	138%	124%	155%	165%	161%	190%	145%	112%	118%	128%	134%	145%	162%	166%	178%	193%	187%	154%	152%
Consolidated Edison Co.	144%	146%	143%	154%	149%	151%	123%	110%	124%	145%	150%	144%	143%	148%	159%	167%	154%	144%	144%
DTE Energy Co.	145%	142%	132%	140%	134%	143%	101%	91%	116%	121%	137%	153%	170%	173%	180%	207%	197%	134%	155%
Duke Energy Co.	171%	106%	139%	157%	153%	102%	102%	90%	101%	115%	120%	120%	133%	135%	136%	142%	131%	133%	122%
Eversource Energy	99%	95%	106%	108%	131%	163%	128%	114%	136%	150%	143%	141%	158%	158%	166%	175%	166%	119%	151%
NextEra Energy Inc.	160%	167%	174%	201%	203%	249%	196%	170%	155%	157%	177%	201%	225%	220%	232%	247%	250%	193%	203%
Public Service Enterprise Group	178%	186%	191%	245%	267%	304%	250%	177%	176%	161%	154%	151%	160%	163%	164%	178%	184%	232%	167%
WEC Energy Group	129%	147%	156%	168%	182%	179%	153%	147%	171%	186%	213%	223%	249%	219%	209%	217%	218%	159%	205%
Xcel Energy Inc.	113%	113%	132%	139%	150%	154%	127%	121%	135%	143%	156%	157%	165%	171%	189%	208%	206%	133%	165%
Mean	142%	136%	148%	164%	170%	182%	147%	126%	137%	145%	154%	159%	174%	173%	179%	193%	188%	**156%**	**163%**
Median	144%	142%	143%	157%	153%	163%	128%	114%	135%	145%	150%	151%	162%	166%	178%	193%	187%	**147%**	**158%**
Hevert Proxy Group																			
ALLETE				212%	219%	195%	156%	113%	127%	138%	136%	152%	151%	146%	153%	182%	182%		148%
Alliant Energy	110%	97%	120%	131%	155%	173%	131%	103%	131%	147%	161%	169%	197%	196%	214%	235%	218%	131%	177%
Ameren Corp.	163%	162%	161%	172%	164%	159%	122%	83%	81%	92%	106%	125%	152%	149%	165%	198%	202%	158%	135%
American Electric Power	138%	124%	155%	165%	161%	190%	145%	112%	118%	128%	134%	145%	162%	166%	178%	193%	187%	154%	152%
AVANGRID, Inc.															84%	93%	102%		
Black Hills Corp.	143%	134%	134%	165%	153%	164%	124%	77%	108%	109%	121%	161%	181%	152%	186%	207%	176%	145%	148%
CMS Energy Corp.	137%	80%	90%	125%	142%	177%	127%	117%	148%	170%	192%	218%	239%	254%	276%	296%	287%	125%	220%
DTE Energy Co.	145%	142%	132%	140%	134%	143%	101%	91%	116%	121%	137%	153%	170%	173%	180%	207%	197%	134%	155%
El Paso Electric	140%	120%	148%	176%	179%	179%	134%	102%	134%	164%	163%	161%	158%	152%	167%	194%	197%	154%	159%
Hawaiian Electric Industries	153%	151%	179%	181%	192%	166%	166%	113%	140%	150%	164%	156%	167%	175%	169%	184%	181%	170%	160%
NextEra Energy, Inc.	160%	167%	174%	201%	203%	249%	196%	170%	155%	157%	177%	201%	225%	220%	232%	247%	250%	193%	203%
NorthWestern Corp.					160%	147%	109%	105%	122%	138%	146%	159%	174%	167%	171%	169%	155%		151%
OGE Energy	147%	154%	178%	187%	205%	197%	145%	139%	180%	197%	204%	231%	228%	184%	170%	192%	178%	173%	190%
Otter Tail Corp.	245%	209%	185%	183%	178%	200%	167%	108%	120%	123%	152%	196%	196%	186%	207%	244%	244%	195%	178%
Pinnacle West Capital	116%	114%	130%	130%	129%	127%	100%	90%	113%	125%	141%	153%	158%	160%	172%	191%	182%	121%	149%
PNM Resources	95%	93%	124%	147%	134%	125%	72%	50%	68%	86%	100%	109%	127%	129%	156%	187%	185%	113%	120%
Portland General Electric					153%	140%	101%	83%	97%	109%	117%	131%	145%	148%	155%	173%	162%		132%
Southern Company	230%	233%	227%	238%	229%	230%	211%	182%	186%	208%	218%	209%	211%	212%	211%	205%	190%	228%	203%
WEC Energy Group	129%	147%	156%	168%	182%	179%	153%	147%	171%	186%	213%	223%	249%	219%	209%	217%	218%	159%	205%
Xcel Energy Inc.	113%	113%	132%	139%	150%	154%	127%	121%	135%	143%	156%	157%	165%	171%	189%	208%	206%	133%	165%
Mean	148%	140%	152%	168%	170%	173%	136%	111%	129%	142%	155%	169%	182%	177%	182%	201%	195%	**155%**	**166%**
Median	142%	138%	152%	168%	161%	173%	131%	108%	127%	138%	152%	159%	170%	171%	175%	196%	189%	**152%**	**158%**

Source: Calculations made from data contained in Value Line Investment Survey.

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STANDARD AND POOR'S 500 COMPOSITE RATES OF RETURN ON AVERAGE COMMON EQUITY AND MARKET TO BOOK RATIOS

Year	Return on Average Equity	Market-To-Book Ratio
2002	8.4%	295%
2003	14.2%	278%
2004	15.0%	291%
2005	16.1%	278%
2006	17.0%	277%
2007	12.8%	284%
2008	3.0%	224%
2009	10.6%	187%
2010	14.2%	208%
2011	14.6%	207%
2012	13.5%	214%
2013	14.5%	237%
2014	14.2%	268%
2015	12.1%	273%
2016	12.7%	271%
2017	13.9%	310%
Averages:		
2002-2008	**12.4%**	**275%**
2009-2017	**13.4%**	**242%**

Source: Standard & Poor's.

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PROXY COMPANIES
RISK INDICATORS

Company	Value Line Safety Rank	Value Line Beta	Value Line Financial Strength	
Parcell Proxy Group				
American Electric Power Co.	1	0.55	A+	4.33
Consolidated Edison Co.	1	0.45	A+	4.33
DTE Energy Co.	2	0.55	B++	3.67
Duke Energy Co.	2	0.50	A	4.00
Eversource Energy	1	0.60	A	4.00
NextEra Energy Inc.	1	0.60	A+	4.33
Public Service Enterprise Group	1	0.65	A++	4.67
WEC Energy Group	1	0.50	A+	4.33
Xcel Energy Inc.	1	0.50	A+	4.33
Mean	**1.2**	**0.54**	**A+**	**4.22**
Hevert Proxy Group				
ALLETE	2	0.65	A	4.00
Alliant Energy	2	0.60	A	4.00
Ameren Corp.	1	0.55	A	4.00
American Electric Power	1	0.55	A+	4.33
AVANGRID, Inc.	2	0.40	B++	3.67
Black Hills Corp.	2	0.75	A	4.00
CMS Energy Corp.	2	0.55	B++	3.67
DTE Energy Co.	2	0.55	B++	3.67
El Paso Electric	2	0.65	B++	3.67
Hawaiian Electric Industries	2	0.60	A	4.00
NextEra Energy, Inc.	1	0.60	A+	4.33
NorthWestern Corp.	2	0.55	B++	3.67
OGE Energy	2	0.85	A	4.00
Otter Tail Corp.	2	0.75	A	4.00
Pinnacle West Capital	1	0.55	A+	4.33
PNM Resources	3	0.65	B+	3.33
Portland General Electric	2	0.60	B++	3.67
Southern Company	2	0.50	A	4.00
WEC Energy Group	1	0.50	A+	4.33
Xcel Energy Inc.	1	0.50	A+	4.33
Mean	**1.8**	**0.60**	**A**	**3.95**

Sources: Value Line Investment Survey, Standard & Poor's Stock Guide.

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PROXY COMPANIES AND STANDARD & POOR'S 500 RISK INDICATORS

Group	Value Line Safety Rank	Value Line Beta	Value Line Financial Strength
S&P 500	**2.4**	**1.04**	**B++**
Parcell Proxy Group	**1.2**	**0.54**	**A+**
Hevert Proxy Group	**1.8**	**0.60**	**A**

Sources: Value Line Investment Survey, Standard & Poor's Stock Guide.

Definitions:

Safety rankings are in a range of 1 to 5, with 1 representing the highest safety or lowest risk.

Beta reflects the variability of a particular stock, relative to the market as a whole. A stock with a beta of 1.0 moves in concert with the market; a stock with a beta below 1.0 is less variable than the market; and a stock with a beta above 1.0 is more variable than the market.

Financial strengths range from C to A++, with the latter representing the highest level.

Common stock rankings range from D to A+, with the latter representing the highest level.

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LONG-TERM PROJECTIONS OF GROSS DOMESTIC PRODUCT GROWTH

SOCIAL SECURITY ADMINISTRATION

Year	Real GDP	GDP Index	Nominal GDP	Year	Real GDP	GDP Index	Nominal GDP
2020	2.60%	2.20%	4.80%	2058	2.10%	2.20%	4.30%
2021	2.50%	2.20%	4.70%	2059	2.10%	2.20%	4.30%
2022	2.40%	2.20%	4.60%	2060	2.10%	2.20%	4.30%
2023	2.40%	2.20%	4.60%	2061	2.10%	2.20%	4.30%
2024	2.40%	2.20%	4.60%	2062	2.10%	2.20%	4.30%
2025	2.30%	2.20%	4.50%	2063	2.10%	2.20%	4.30%
2026	2.20%	2.20%	4.40%	2064	2.10%	2.20%	4.30%
2027	2.20%	2.20%	4.40%	2065	2.00%	2.20%	4.20%
2028	2.20%	2.20%	4.40%	2066	2.00%	2.20%	4.20%
2029	2.20%	2.20%	4.40%	2067	2.00%	2.20%	4.20%
2030	2.10%	2.20%	4.30%	2068	2.00%	2.20%	4.20%
2031	2.10%	2.20%	4.30%	2069	2.00%	2.20%	4.20%
2032	2.10%	2.20%	4.30%	2070	2.10%	2.20%	4.30%
2033	2.10%	2.20%	4.30%	2071	2.10%	2.20%	4.30%
2034	2.10%	2.20%	4.30%	2072	2.10%	2.20%	4.30%
2035	2.10%	2.20%	4.30%	2073	2.10%	2.20%	4.30%
2036	2.10%	2.20%	4.30%	2074	2.10%	2.20%	4.30%
2037	2.10%	2.20%	4.30%	2075	2.10%	2.20%	4.30%
2038	2.10%	2.20%	4.30%	2076	2.10%	2.20%	4.30%
2039	2.10%	2.20%	4.30%	2077	2.10%	2.20%	4.30%
2040	2.10%	2.20%	4.30%	2078	2.10%	2.20%	4.30%
2041	2.10%	2.20%	4.30%	2079	2.10%	2.20%	4.30%
2042	2.10%	2.20%	4.30%	2080	2.10%	2.20%	4.30%
2043	2.10%	2.20%	4.30%	2081	2.10%	2.20%	4.30%
2044	2.10%	2.20%	4.30%	2082	2.10%	2.20%	4.30%
2045	2.20%	2.20%	4.40%	2083	2.10%	2.20%	4.30%
2046	2.20%	2.20%	4.40%	2084	2.10%	2.20%	4.30%
2047	2.20%	2.20%	4.40%	2085	2.00%	2.20%	4.20%
2048	2.20%	2.20%	4.40%	2086	2.0%	2.20%	4.20%
2049	2.20%	2.20%	4.40%	2087	2.0%	2.20%	4.20%
2050	2.10%	2.20%	4.30%	2088	2.0%	2.20%	4.20%
2051	2.10%	2.20%	4.30%	2089	2.0%	2.20%	4.20%
2052	2.10%	2.20%	4.30%	2090	2.0%	2.20%	4.20%
2053	2.10%	2.20%	4.30%	2091	2.0%	2.20%	4.20%
2054	2.10%	2.20%	4.30%	2092	2.0%	2.20%	4.20%
2055	2.10%	2.20%	4.30%				
2056	2.10%	2.20%	4.30%				
2057	2.10%	2.20%	4.30%				
				Average			**4.32%**

Source: 2018 OASDI Trustees Report.

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LONG-TERM PROJECTIONS OF GROSS DOMESTIC PRODUCT GROWTH

ENERGY INFORMATION ADMINISTRATION

Annual Growth (2018-2050):	
Real GDP	1.9%
GDP Chain-type Price Index	2.3%
Nominal GDP Growth	**4.2%**

Source: Energy Information Administration, Annual Energy Outlook 2019 with Projections to 2050.

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